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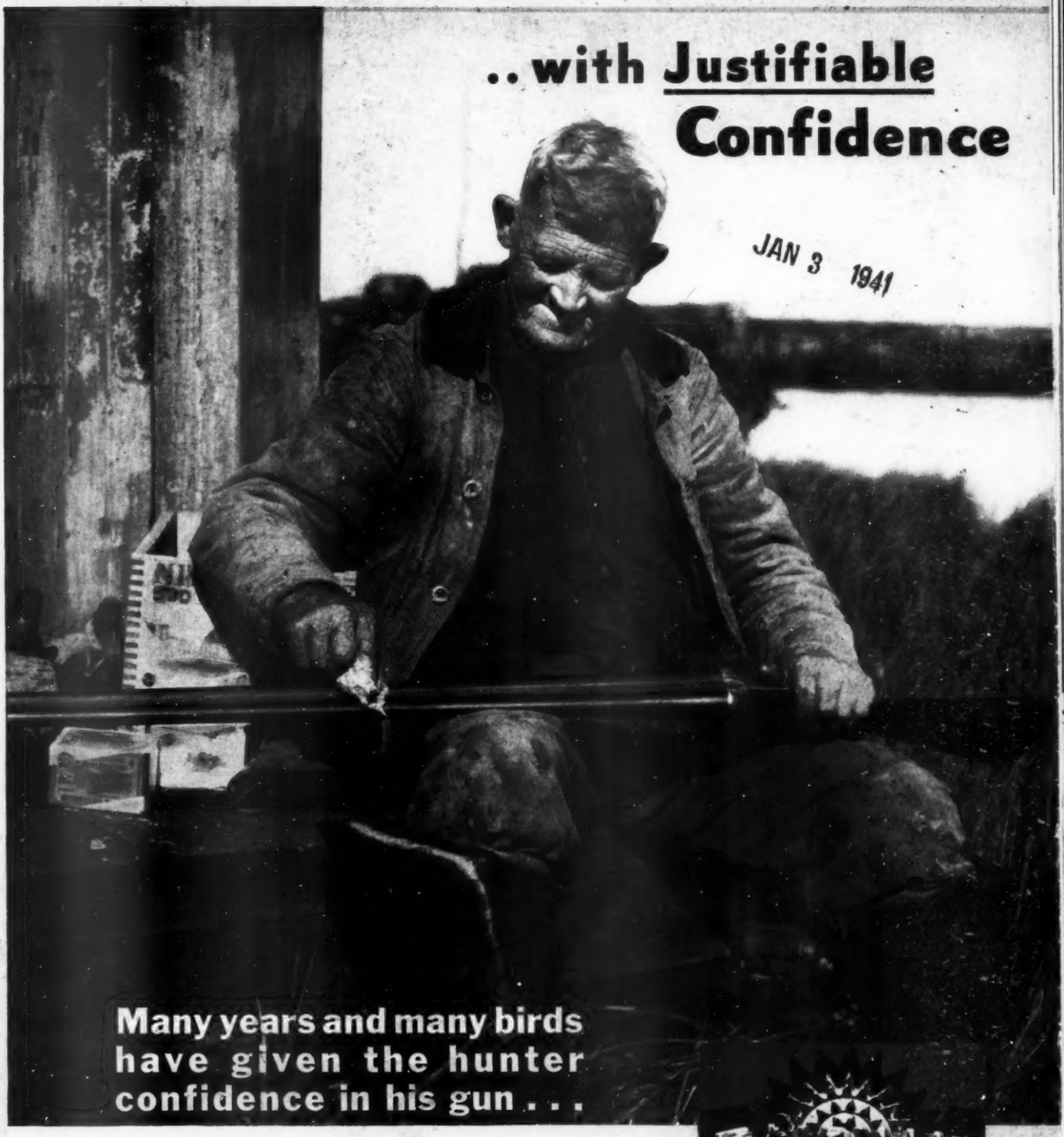

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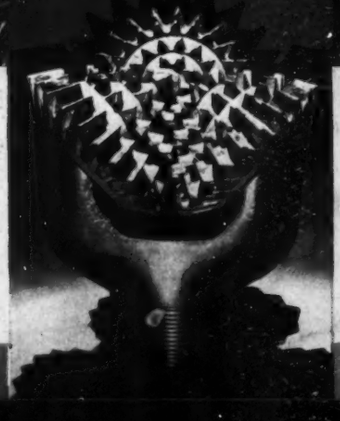

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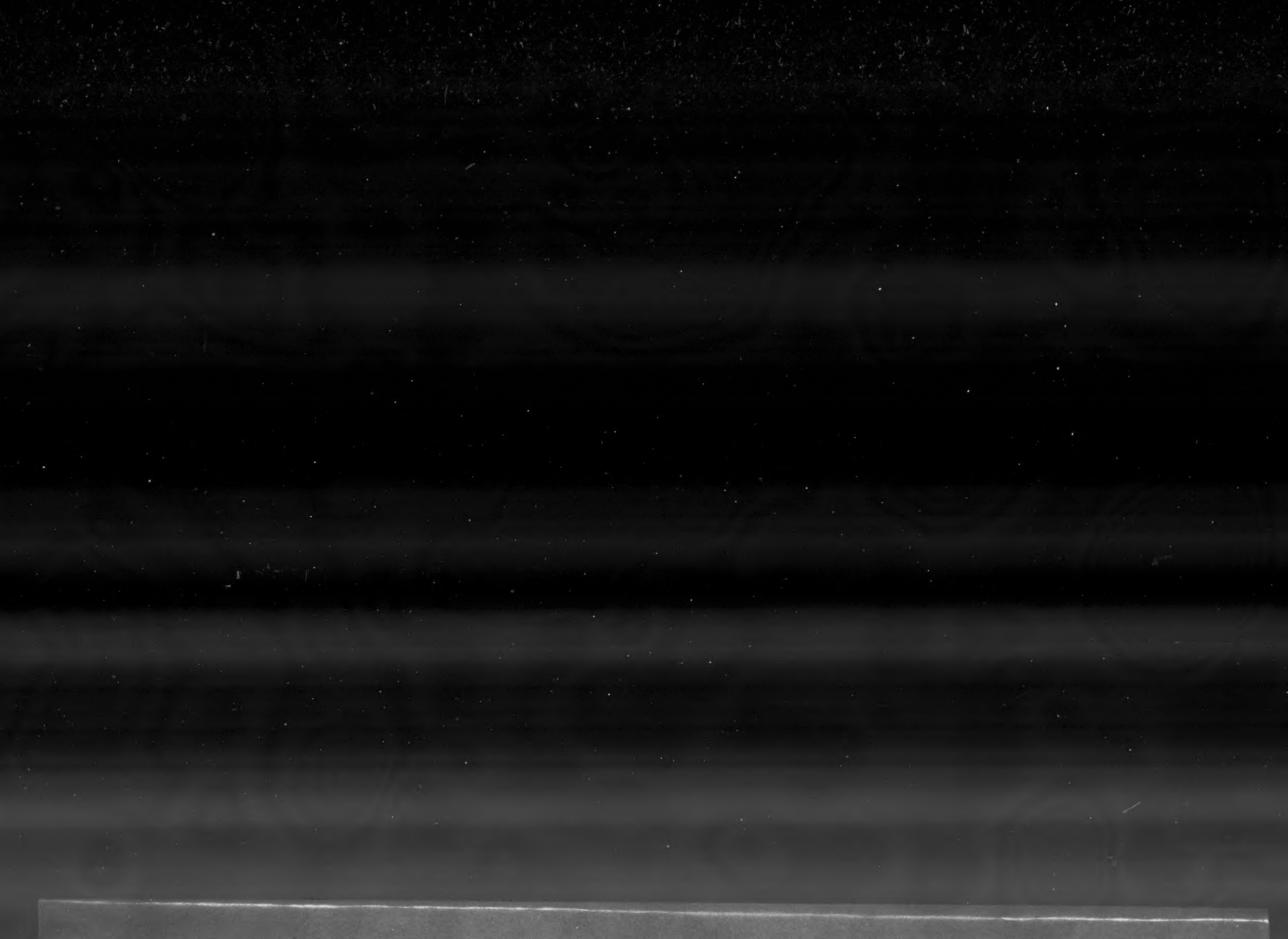

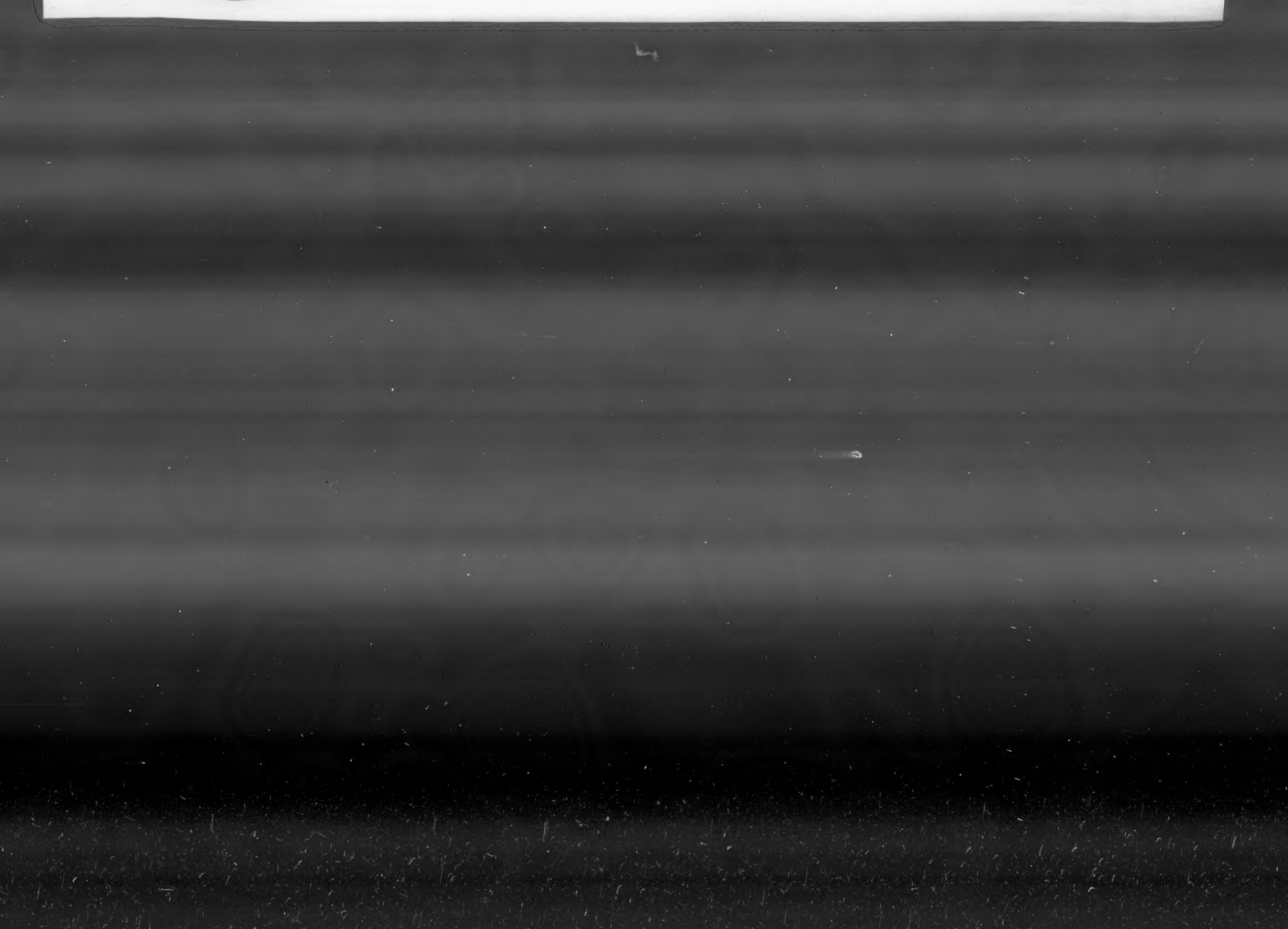

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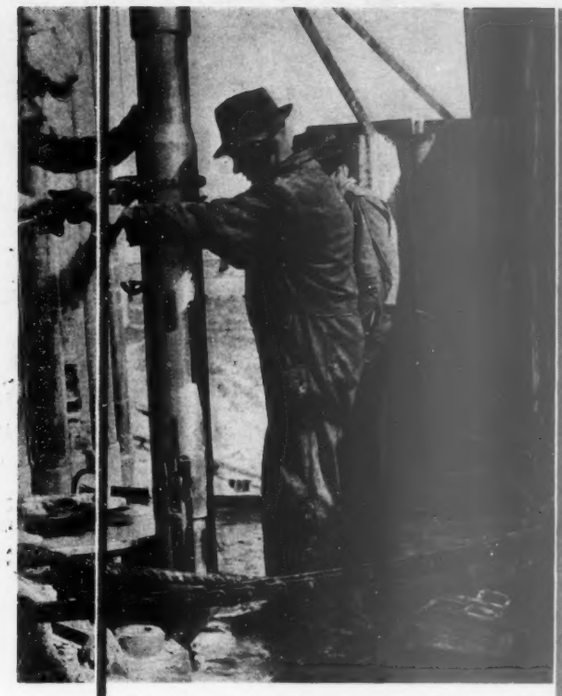

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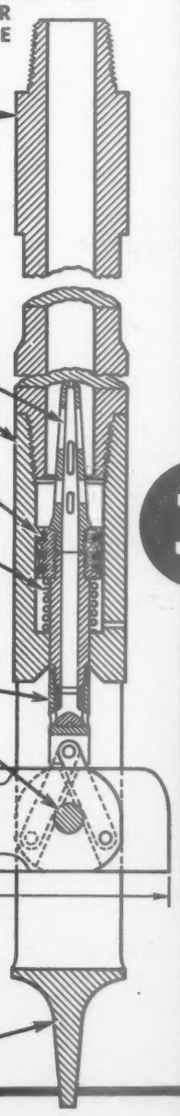

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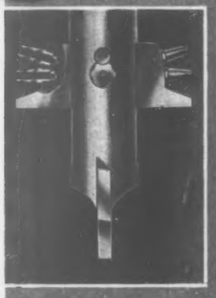

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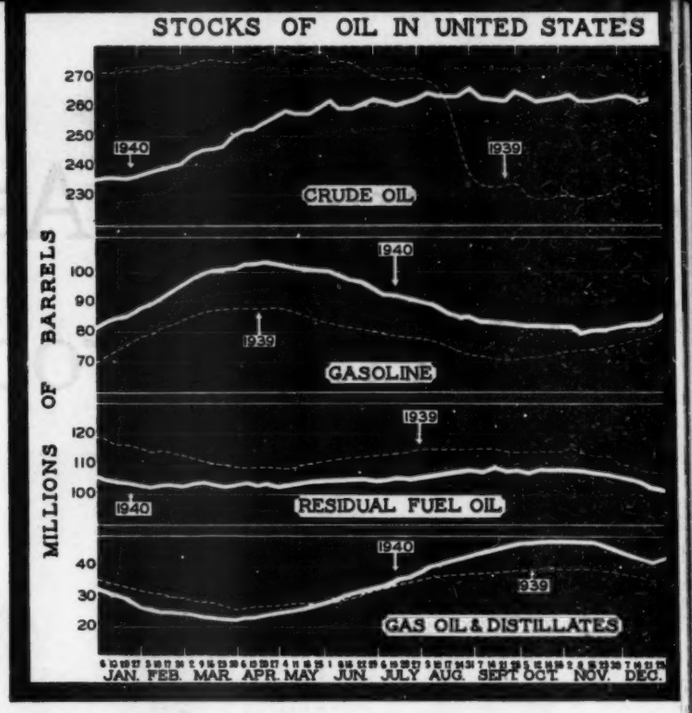
Trends

Fuel-Oil Orders of Defense Industries Aid Interior Market



AT the start of a new year the defense program could be pointed to as a definite factor in refinery markets within a large interior area. Reflecting a heavy industrial demand in which the industries supplying the needs of the defense program are important, residual fuel oils throughout the Middle West and the Mid-Continent are strong and prices generally higher.

CRUDE PRODUCTION *3,369,740 bbl. daily average—down 233,425 bbl. One year ago 3,550,350 bbl.*

CRUDE STOCKS *262,488,000 bbl. as of December 21—up 1,195,000 bbl. One year ago 236,038,000 bbl.*

GASOLINE STOCKS *83,274,000 bbl. as of December 28—up 1,404,000 bbl. One year ago 82,277,000 bbl.*

RESIDUAL FUEL-OIL STOCKS *102,620,000 bbl. as of December 28—down 221,000 bbl. One year ago 106,079,000 bbl.*

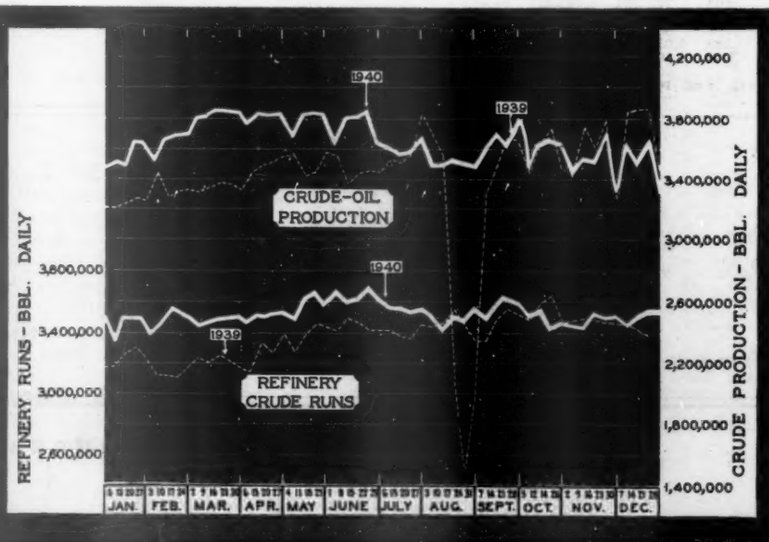
GAS OIL AND DISTILLATES *42,266,000 bbl. as of December 28—up 6,000 bbl. One year ago 34,122,000 bbl.*

REFINERY RUNS *3,585,000 bbl. daily week ended December 28 — same as last week. One year ago 3,445,000 bbl.*

The upturn in the Mid-Continent where low-gravity fuel oils have been "weak sisters" so long that many refinery operators have forgotten when they were otherwise, is particularly significant. About the only outlets that refiners in that area have had for their fuel oils were local industries, utilities and the railroads and the product on spot sales usually brought about half of the cost of crude at the wells. Recently new business has been coming from points in the Middle West indicating that demands on refiners in that area exceed supplies. Many of these middle western inquiries emanate from plants which have defense orders and expect to be operating at capacity throughout 1941.

The additional business is coming to the Mid-Continent with stocks of fuel oil less than a year ago in all of the refining groups—Oklahoma, Kansas, North Texas, Arkansas and North Louisiana.

Low prices for distillates, gas oils and residual fuel oils always tend to weaken gasoline markets because they mean low-cost raw materials for the cracking operations. When these products strengthen, refiners are forced to advance their gasoline quotations if they are to justify keeping these cracking stocks at their plants rather than selling them to outside buyers who consume them as fuels. This situation has been outstanding in recent months when crude costs at many refineries were high in relation to gasoline quotations and operators felt compelled to obtain their maximum yields of gasoline from cracking operations.



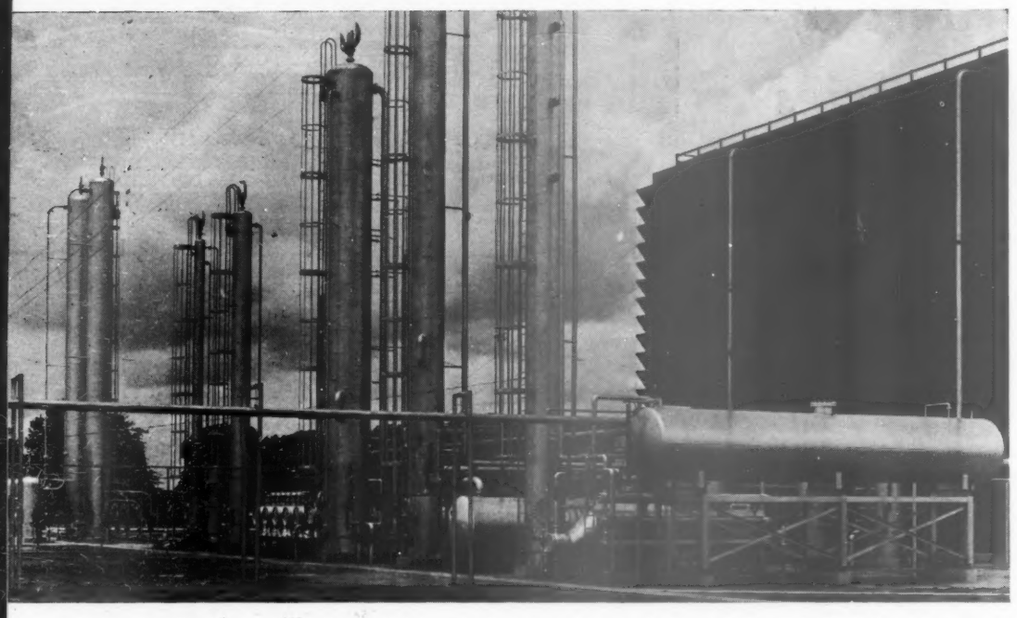
DAILY AVERAGE PRODUCTION FOR WEEK

	Dec. 28, 1940	Bur. Mines Dec. est. of demand	December state allowables	Dec. 21, 1940
Arkansas	68,525	66,410	70,176	68,705
California	604,500	593,900	571,000	620,750
Eastern fields	106,120	106,400	.....	106,050
Illinois	323,200	363,600	.....	324,850
Kansas	186,350	188,400	192,400	199,700
Louisiana	288,490	280,300	287,246	289,990
North Louisiana	*67,940*	.....	.....	*68,690*
Louisiana Gulf Coast	*220,550*	.....	.....	*221,300*
Michigan	42,145	47,100	44,000	41,785
Mississippi	15,060	13,900	.....	15,800
Nebraska	3,200	2,000	.....	3,100
New Mexico	104,020	100,600	104,000	103,530
Oklahoma	397,100	422,600	390,000	391,875
Rocky Mountain states	94,430	98,100	.....	93,680
Texas	1,136,600	1,277,000	1,316,660	1,343,350
East Texas	*301,350*	.....	.....	*375,125*
West Texas	*181,600*	.....	.....	*219,675*
North Central Texas	*128,175*	.....	.....	*137,125*
East Central Texas	*80,025*	.....	.....	*83,250*
Texas Panhandle	*71,375*	.....	.....	*83,175*
Texas Gulf Coast	*298,950*	.....	.....	*354,150*
Southwest Texas	*75,125*	.....	.....	*90,850*
Total United States	3,369,740	3,560,310	.....	3,603,165

This strength in fuel oils does not apply to Gulf Coast and Atlantic seaboard markets. Stocks of residual fuel oils at Texas Gulf, Louisiana Gulf and East Coast refineries are substantially higher than they were a year ago and markets are weak.

Probably the most optimistic development of the past week so far as the coastal markets are concerned is the additional indication that the application of conservation and proration regulations in Texas will be on a better basis starting this month. Through an additional shutdown day last week, production in the state for December was brought down practically to the Bureau of Mines recommendation. While there has been no general improvement in the refinery markets of that state, some of the weak spots in crude-oil markets have improved. Texas' proration schedule for this month will keep supplies within demands.

Recycling Assuming Rightful Place in Producing Economy



Processing towers in a condensate-recovery plant recently completed in the Long Lake field of East Texas

By GEORGE WEBER

During the past year great strides have been made in development of gas-condensate fields, in the design of plants, and in the methods of producing gas-condensate properties. Here is compiled an up-to-date list of plants in operation in Texas, Louisiana, and Arkansas, and data on the reservoirs of all condensate fields in these states given, as well as the properties of the condensate produced. The effect of the growing volume of condensate output on local crude markets is also discussed.

DEVELOPMENT and exploitation of high-pressure gas-condensate reserves have seen their greatest evolution during the past year. Methods for efficient recovery of liquid condensate by means of extraction, and maintenance of formation pressure through gas recycling have advanced well beyond the experimental stage and now assume an important place in production technique.

To date the importance of recycling has revolved principally around contributions to more efficient producing operations. It has led the industry in adoption of measures for waste prevention, and has pioneered in the field of cooperative development and unitization. At this stage, however, this producing group is assuming its place as an integral part of crude-producing economy in the petroleum industry.

During 1940 the volume of high-pressure gas injected underground in the State of Texas has nearly trebled (Fig. 1), and the attendant production of condensate has increased at the same rate (Table 1). A total of 31 recycling and repressuring plants are now processing high-pressure gas in Texas and several more are under construction in Texas and Louisiana (Table 2). The daily condensate producing capacity of plants now operating totals 24,800 bbl., and providing for new plants soon to be completed, the daily production of condensate is expected to reach 40,000 bbl. by late February or March, 1941. Even at this rate of increase, however, condensate production is not keeping pace with the development of new reserves. A total of 141 fields in three states now are capable of producing gas and condensate through 870 wells as shown in Tables 3 and 4.

In the case of most of these fields, gas recycling is an absolute necessity, to maintain reservoir pressure and prevent underground condensation of the liquid. In preventing this irrecoverable waste, gas which has no immediate market demand may be stored for future use. Recycling affords a more immediate realization of return on well investments through condensate sales. In fields where gas withdrawals for legal use are contracted, recycling becomes a more pressing need, in order that as much condensate as possible may be stripped from the gas before pressure decline results in its loss. These conditions establish the industry as an important one, and in certain cases justify large rates of condensate production. In any case, a recycling plant is costly, and large-scale operations contributing to a reasonable pay-out period are warranted on an economic basis.

TABLE 1—RECYCLING AND REPRESSURING PLANT OPERATIONS IN TEXAS

			Daily average		
1939—	No. plants	No. prod. wells	Gas processed (M.c.f.)	Gas injected (M.c.f.)	Condensate recovered (bbl.)
January	10	20	116,444	106,726	2,235
February	10	24	150,501	136,770	2,822
March	10	26	155,602	145,837	2,934
April	12	29	194,360	168,357	3,274
May	15	30	214,738	200,938	3,480
June	16	33	245,727	233,260	3,767
July	19	43	285,931	273,152	4,279
August	19	47	227,687	216,940	3,254
September	19	48	312,949	296,627	4,886
October	20	55	397,993	371,192	5,437
November	21	61	435,561	382,115	5,652
December	22	87	470,442	420,258	6,612
1940—					
January	22	90	483,378	449,590	8,440
February	22	90	592,257	545,064	9,286
March	23	108	669,005	596,489	10,015
April	24	109	688,479	617,183	10,434
May	25	137	766,376	669,698	10,798
June	28	168	775,293	705,211	11,455
July	28	177	835,293	759,259	15,069
August	28	181	931,892	798,548	16,101
September	30	189	1,086,474	967,181	16,306
October	31	229	1,168,481	*1,076,031	20,118

*Includes 114,049 M.c.f. recycled.

Crude Market

Alarm is being expressed from some quarters concerning the increase in condensate production. That this alarm is not fully justified can be seen if the situation is understood from the recycling angle. It is granted that the increment which

TABLE 1-A—GAS DISPOSITION

1940—	Extraction (M.c.f.)	Plant use (M.c.f.)	To pipe lines (M.c.f.)	Repressuring (M.c.f.)	Drilling and lease use (M.c.f.)	Vented (M.c.f.)
January	7,487	11,273	4,480	449,590	1,316	9,232
February	11,948	12,897	4,117	545,064	3,414	14,817
March	34,398	14,185	2,789	596,489	3,351	17,793
April	36,428	15,321	1,793	617,183	2,561	15,193
May	36,145	17,781	1,083	669,698	3,348	38,329
June	35,874	18,112	2,160	705,211	3,052	10,884
July	26,326	22,441	1,925	759,259	3,280	22,062
August	31,706	83,409	5,078	798,548	1,439	11,712
September	42,877	39,648	3,605	967,181	1,651	31,512
October	36,549	41,037	4,592	*1,076,031	1,665	†44,262

*Includes 114,049 M.c.f. recycled. †Includes 2,198 M.c.f. flash vapors.

condensate production represents does at the present time exert an influence on a critical crude market. However, to cite Texas as the outstanding example of this condition, the addition of 25,000 bbl. of condensate to a total state crude production of 1,345,000 bbl. should not spell disaster, nor place the blame on recycling operators, when such situation arises from more fundamental and widespread ills of overproduction.

The fact that recycling operations are not subject to state control through proration brings ready criticism and demands for curtailment of such developments. Pressure maintenance through recycling of gas represents the most advanced conservation yet attained in production. Thus, it is wholly outside the realm of control based on prevention of waste. Conformance to market demand, the crux of the current control problem will affect recycling operations sufficiently to keep them in line with normal condensate demand. This is true at the present time, when proposed recycling plants are awaiting construction pending an improved market condition. It has even affected the production schedules of existing plants, by curtailment of gas throughput and restriction of special product output in the face of necessity for amortizing costly installations.

Condensate exerts an effect on crude demand in excess of its actual volume ratio with crude oil, since it produces a much larger fraction of motor fuel. In several plants a gasoline cut is made, and since the lead susceptibility of the product is high, it is blended with tetraethyl lead and sold in competition with refinery products in regular and high-octane brackets. This has caused market conditions which tend to work hardship on petroleum refiners, some of whom have failed in the past to make crude runs conform to market demand for products.

The local production of distress gasoline is equally felt by recycling operators, and as a result, the further refining and finishing of condensate is a contingency. It has been determined that reforming of crude condensate produces a high yield of motor fuel in the aviation-gasoline grade. The maximum return from recycling operations may well prove to result in the future from installation of reforming plants specifically designed to process that type of crude. This will relieve pressure from the regular-grade gasoline market and provide added sources for aviation fuel for future national-defense needs. While at the present time, large stocks of all gasoline grades exist, the future increased demand for aviation fuel should afford an outlet for such condensate-reforming projects.

As shown in Fig. 2 the present concentration of most recycling plants into two main geographical districts provide a sufficient supply in each area for two such projects, at Corpus Christi and Palestine, Texas. Other areas, the upper Gulf Coast of Texas, the Louisiana coastal belt and North Louisiana are probable future centers for more condensate production.

Texas Operations

The 31 recycling and repressuring plants processing high-pressure gas in Texas represent a variety of operations as shown in Table 2. Most of them inject the processed gas directly back into the formation from which it was originally produced. Others operate without compressors and return the gas to a formation of lower pressure, and are thus classified as repressuring operations. Only those plants handling high-pressure gas are included in this classification, excluding such projects as the K.M.A. repressuring operation.

Methods of condensate extraction also vary among the plants. Some of the smaller projects recover the condensate through pressure reduction and increase efficiency by utilizing the attendant temperature drop. Others extract the maximum amount of condensate from a given pressure drop by means of refrigeration. Most of the large recent installations employ high-pressure absorption. The plants of latest design are flexible in recovery efficiency and are equipped to produce light products when demand justifies the operation.

Existing plants are tied into gathering systems which handle production from a total of 185 gas-condensate wells. Injection of gas is carried out in a total of 68 input wells.

TABLE 2—RECYCLING AND REPRESSURING PLANTS IN OPERATION IN TEXAS

Company—	Field	County	Gas processing capacity (M.c.f./day)	Condensate production capacity (gal./day)	No. prod. wells	No. injection wells	Separator or absorber pressure (lb./sq. in.)
J. S. Abercrombie Co. and Harrison Oil Co.	Old Ocean	Brazoria	140,000	140,000	28	2	1,250
Agua Dulce Co.	Agua Dulce	Nueces	60,000	50,000	9	4	1,200
American Liberty Oil Co.	Grapeland	Houston	35,000	31,000	6	1	1,550
Anco Gas Corp.	Long Lake	Anderson	45,000	45,000	18	1	1,350
Coastal Recycling Corp.	Agua Dulce	Nueces	135,000	102,000	20	7	1,350
Coronado Corp.	La Rosa	Refugio	50,000	45,000	5	2	1,700
Corpus Christi Corp.	Stratton	Nueces	65,000	55,000	6	2	1,200
W. R. Davis & Co.	Alice	Jim Wells	25,000	25,000	..	..	..
Gasoline Production Corp.	Grapeland	Houston	50,000	55,000	4	2	1,850
Gulf Plains Corp.	Agua Dulce	Nueces	100,000	85,000	13	5	1,300
H. M. Harrell	Bammell	Harris	40,000	32,000	13	2	1,100
Hunt Oil Co.	Long Lake	Anderson	55,000	46,000	11	2	1,500
Lone Star Gas Co. and Trinity Gas Co.	Grapeland	Houston	55,000	70,000	7	2	1,560
Lockhart Oil Co.	Agua Dulce	Nueces	30,000	40,000	7	7	1,200
McCollum Oil Co.	La Blanca	Hidalgo	8,400	2,800	1	1	2,000
McCollum Oil Co.	La Blanca	Hidalgo	10,150	2,400	1	1	1,900
Pantana Petroleum Co.	La Blanca	Hidalgo	18,000	3,000	1	1	2,000
Pantana Petroleum Co.	La Blanca	Hidalgo	16,700	3,100	1	1	2,000
Pantana Petroleum Co.	La Blanca	Hidalgo	10,500	3,350	1	1	1,800
Pantana Petroleum Co.	La Blanca	Hidalgo	10,500	2,700	1	1	1,900
Pintas Gas Products Co.	Agua Dulce	Nueces	50,000	47,000	1	2	1,525
Portex Oil Co.	Joaquin	Shelby	20,000	4,000	1	1	1,200
Roeser & Pendleton, Inc.	Cayuga	Anderson	10,000	5,000	3	1	1,000
Sun Oil Co.	Seabreeze	Chambers	13,800	7,800	4	3	1,775
Sun Oil Co.	Willow Slough	Chambers	11,600	5,500	4	2	1,875-3,000
Tide Water Associated Oil Co. and Seaboard Oil Co.	Cayuga No. 1	Anderson	28,000	25,000	5	5	1,200
Tide Water Associated Oil Co. and Seaboard Oil Co.	Cayuga No. 2	Anderson	40,000	35,000	5	4	1,050
Tide Water Associated Oil Co. and Seaboard Oil Co.	Cayuga	Anderson	15,250	6,900	1	1	1,550
Tide Water Associated Oil Co. and Seaboard Oil Co.	Cayuga	Anderson	14,250	5,900	1	1	1,600
Tide Water Associated Oil Co. and Seaboard Oil Co.	Long Lake	Anderson	60,000	50,000	6	2	1,400
Trinity Gas Corp.	Long Lake	Anderson	17,000	13,000	1	1	1,050
Total			1,239,150	1,043,450	185	68	..

New Plants

In addition to the 31 operating plants, several others are under construction and proposed in the state. The Lone Star Gas Co. and Shamrock Oil & Gas Co. are completing a 30,000,000-cu. ft. plant in the Opelika field of Anderson County. This plant will produce about 75,000 gal. of condensate daily.

Another large plant is under construction in La Gloria field, Jim Wells County, by La Gloria Corp., an affiliate of Corpus Christi Corp., Coastal Recycling Corp. and Gulf Plains Corp. This plant will have an average daily throughput of 150,000,000 cu. ft. and an average daily output of 150,000 gal. of condensate.

Plans are being completed for installation of a

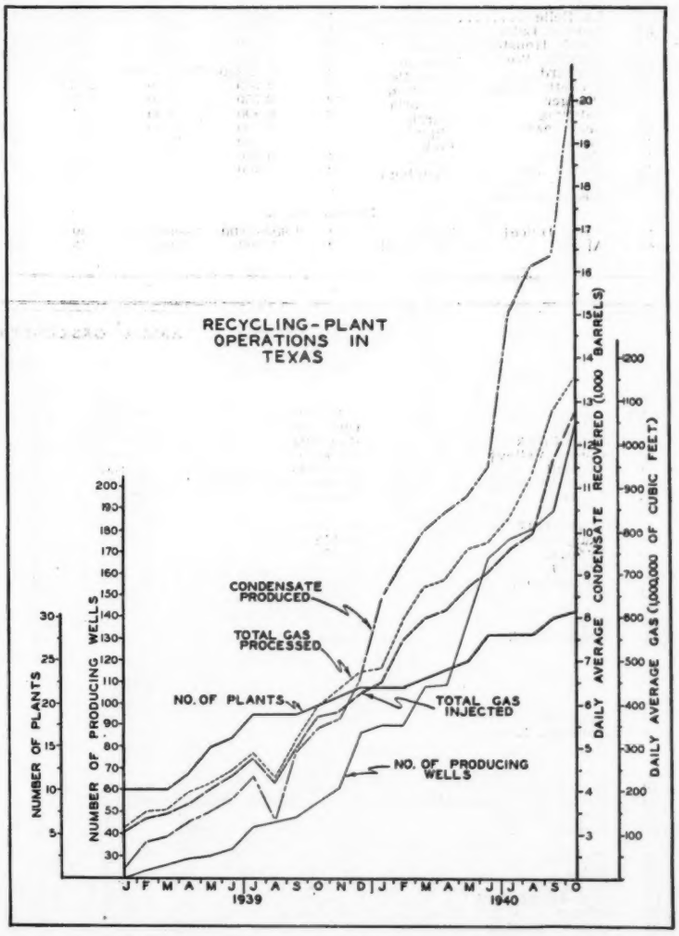

RECYCLING-PLANT OPERATIONS IN TEXAS
NUMBER OF PLANTS
NUMBER OF PRODUCING WELLS
DAILY AVERAGE CONDENSATE RECOVERED (1000 BARRELS)
DAILY AVERAGE GAS (1,000,000 OF CUBIC FEET)
CONDENSATE PRODUCED
TOTAL GAS PROCESSED
NO. OF PLANTS
TOTAL GAS INJECTED
NO. OF PRODUCING WELLS
J F M A M J J A S O N D J F M A M J J A S O
1939
1940

Fig. 1—Recycling-plant operations in Texas from July 1938 to October 1940, showing that during 1940 the volume of high-pressure gas injected and production of condensate practically trebled

cooperative recycling project in the Katy field, Waller County, capable of processing 200,000,000 cu. ft. of gas daily, and producing approximately 200,000 gal. of condensate. A plant to process 20,000,000 cu. ft. of gas in the Hamman field is proposed by Hamman Exploration Co., which plans to inject gas for both pressure-maintenance and repressuring purposes in Matagorda County.

The W. R. Davis Co., which recently placed a plant on stream in the Alice field, proposes a second one in the Rincon field, Starr County, capable of handling 60,000,000 cu. ft. of gas. Another lower Rio Grande Valley plant is proposed by the Gulf States Oil Corp. in the San Salvador field, Hidalgo County, for a daily gas throughput of 15,000,000 cu. ft. Standard Oil Co. of Texas proposes a plant in the Sejita field of Duval County, and Paul Pewitt reports consideration of a second plant for the Joaquin field of Shelby County, Northeast Texas. Other plants

(Continued on Page 87)

TABLE 3—GAS-CONDENSATE FIELDS IN TEXAS*

Map Key	Field—	County—	Number wells	Sand depth (ft.)	Shut-in well-head pressures (lb.)	Gas-oil ratio	A.P.I. gravity (deg.)
		District No. 1					
1	Chittim	Maverick	6	5,600	1,470	140	64
		District No. 2					
2	Edna	Jackson	5	4,820-5,300	1,800	2,119	39
3	Francitas†	Jackson	1	6,200	2,810	21	64
4	Greta	Refugio	2	5,700	2,100	189	49
5	Heyser	Victoria	3	5,600	2,010	224	50
6	Keeran	Victoria	2	5,200	1,800	511	40
7	La Rosa†	Refugio	8	5,400	2,260	100	59
8	McFaddin	Victoria	4	5,200	2,100	255	49
9	Mission River	Refugio	5	6,200	1,500	45	61
10	Placedo	Victoria	7	5,300	1,200-2,100	201	43
11	Port Lavaca	Calhoun	2	6,200	820	90	58
12	Red Bluff	Jackson	1	6,100	2,400	62	56
13	Refugio	Refugio	22	5,700	550	172	56
14	Texana	Jackson	1	5,700	2,290	180	51
15	Thompson	DeWitt	1	7,800		60	50
16	Tomoconnor	Refugio	1	5,100	967	73	46
		District No. 3					
17	Amelia	Jefferson	4	5,800-6,800	2,000	463	45
18	Anahuac	Chambers	3	6,700-7,100	2,600	121	53
19	Bammel†	Harris	13	6,600	2,300	49	58
20	Caplen	Galveston	1	7,000	2,400	357	52
21	Clear Lake	Harris	7	5,600	2,400	308	45
22	Cleveland	Liberty	1	9,000	2,825	71	47
23	Conroe	Montgomery	6	5,100	1,380	104	46
24	Dickinson	Galveston	10	8,100-9,100	2,326	70	56
25	Esperson Dome	Liberty	1	7,055	2,770	60	60
26	Eureka	Harris	3	7,700	1,800	71	53
27	Fairbanks	Harris	3	7,200	2,307	64	53
28	Fannett	Jefferson	1	9,000	3,120	57	53
29	Gillock	Galveston	11	8,500	2,900	43	55
30	Hardin	Liberty	6	7,500	2,000	48	52
31	Katy†	Waller	11	7,500	2,700	88	52
32	La Belle	Jefferson	1	8,625	3,920	78	48
33	Lovells Lake	Jefferson	1	7,700	2,825	117	54
34	North Houston	Harris	5	7,100	2,500	61	53
35	Orange, West	Orange	2	5,500	2,100	350	45
36	Orchard	Fort Bend	4	6,700-7,300	1,960-2,500	54	58
37	Pickett Ridge	Wharton	2	4,700	1,700	253	31
38	Pledger	Brazoria	12	6,750	2,600	123	70
39	Satsuma	Harris	3	6,800	1,600	104	55
40	Seabreeze†	Chambers	5	8,100	3,200	112	46
41	Segno	Polk	1	5,300	2,120	220	50
42	Tomball	Harris	34	5,600	1,880	94	53
43	Turtle Bay	Chambers	2	6,500	2,450	195	43
44	Willow Slough† (see Seabreeze)						
		District No. 4					
45	Agua Dulce†	Nueces	40	4,800-6,800	1,400-2,300	130	57
46	Alice†	Jim Wells	2	5,300	1,900	58	60
47	Aransas Pass	Aransas and San Patricio	23	7,100-7,400	1,700	90	57
48	Benavides	Duval	6	5,200	1,500	62	56
49	Captain Lucey	Jim Wells	3	5,300-5,600	1,500-2,100	160	60
50	Carolina-Texas	Webb	3	5,000	1,625	240	60
51	Chapman	Nueces	1	4,000	2,100	67	50
52	Clara Driscoll	Nueces	7	5,500-5,700	1,800	39	58
53	East Premont	Jim Wells	2	5,630	2,300	73	57
54	East White Point	San Patricio	1	5,390	1,700	54	58
55	Flour Bluff	Nueces	2	6,500	2,500	49	57
56	Kelsey	Brooks	1	5,000	2,015	200	60
57	La Blanca†	Hidalgo	7	7,500-8,000	1,400-3,400	128	52
58	La Gloria†	Jim Wells	1	6,570	2,600	33	56
59	Magnolia	Jim Wells	2	5,600	2,150	74	61
60	McAllen†	Hidalgo	1	7,400	3,000	80	53
61	Mercedes	Hidalgo	5	7,400	1,200	61	60
62	Muralla	Duval	1	4,691	1,590	45	59
63	Plymouth	San Patricio	2	5,890	2,450	44	62
64	Rincon	Starr	1	4,200	1,600	116	54
65	San Salvador†	Hidalgo	3	7,500	3,400	68	58
66	Saxet	Nueces	47	5,800-9,000	1,600-2,450	80	56
67	Sinton	San Patricio	1	5,400	2,150	194	47
68	South Premont	Jim Wells	1	5,630	3,470	40	51
69	Sullivan City	Nueces	3	4,100	1,700	196	43
70	Sun	Starr	3	4,610	1,665	138	62
71	Tom Graham	Jim Wells	4	4,600	2,000	50	59
72	Wade City	Jim Wells	3	4,700	1,790	108	51
		District No. 5					
73	Buffalo	Leon	8	5,810	2,200	514	48
74	Oakwood	Leon	1	6,000	2,325	140	55
75	Opelika†	Henderson	3	7,900-8,100	3,340	20	60
76	Red Lake	Freestone	3	4,890	1,633	379	53
77	Zephyr	Limestone	2	5,593-5,655	2,255	53	50
		District No. 6					
78	Cayuga†	Anderson	44	4,000-7,200	1,480-2,230	408	66
79	Chapel Hill	Smith	5	7,500	3,106	15	63
80	Grapeland†	Houston	14	5,800	2,175	80	67
81	Joaquin†	Shelby	4	5,000	2,284	261	59
82	Long Lake†	Anderson	55	5,200	2,000	153	62
83	Navarro Crossing	Houston	1	5,850	2,300	261	52
84	Panola	Panola	3	5,980	2,556	50	62
85	Pulaski Ferry	Panola	3	5,700	2,500	42	61
86	Rodessa	Cass and Marion	22	5,600-6,000	1,200-1,750	152	60
87	Waskom	Harrison	8	5,890	2,306	95	61
88	Willow Springs	Gregg	2	7,244	2,899	68	55
	Total		578				

*Data from the Texas Railroad Commission.
†Fields in which recycling is in operation or proposed.

TABLE 4—GAS-CONDENSATE FIELDS IN LOUISIANA*

Map Key	Field—	Parish—	Date of discovery	Number of wells	Depth of production (ft.)	Reservoir pressure (lb./sq. in.)	Recovery of condensate (G.P.M.)	Gravity of condensate (°A.P.I. cor.)	1938 production (bbl.)	1939 production (bbl.)
		North Louisiana								
1	Athens	Claiborne	12-11-40	1	6,316-6,333	3,250	2.11	65		
2	Bear Creek	Bienville	3-14-37	5	6,670-6,705	2,890	0.53	58		9,003
3	Cotton Valley†	Webster	1-11-37	78	8,096-8,136	3,706	2.86	62	1,485,533	1,336,441
4	Driscoll	Bienville	3-24-37	3	7,152-7,218	2,800	0.39			
5	Lake Bisteaneau	Bossier and Bienville	12- -36	10	5,154-87	2,140				
6	Lisbon†	Claiborne	12-11-39	1	8,452-64	‡3,600	0.90	54		
			12-12-40	1	8,766-8,806		2.61			
7	Logansport	De Soto	6- 2-38	1	4,953-5,029	‡2,900	0.30			
8	Longwood	Caddo	3-27-38	1	5,994-6,002	1,909	0.98	51	4,143	4,218
9	Rodessa	Caddo	-35	56	5,902-22	1,000 Avg.	0.76 Avg.	56 Avg.	357,816	324,008
10	Ruston	Lincoln	-37	1	5,320					
11	Shongaloo	Webster	6- 3-38	2	9,137-57	‡2,850	3.0	62		
12	Sibley	Webster	5-22-36	3	5,587-5,614	2,400	0.19	58	174	1,042
13	Simsboro	Lincoln	11-26-35		5,301	‡2,100				
14	Sligo	Bossier	1- -36	31	4,848-5,024	2,100	0.18	58	28,315	31,360
15	Sugar Creek	Claiborne	11- -36	13	5,710-22	2,150	0.30	49-60	31,511	35,861
		South Louisiana								
16	Abbeville	Vermilion	3-14-37		7,666-75		1.07	42		
			6- 8-38	1	7,866-68		0.35	60		
17	Bancroft	Beauregard	7- 7-39	1	10,505-26	‡3,500	1.05	55		
18	Bateman Lake†	St. Mary	5-15-38	1	7,575-80	‡2,800	0.70	61		
			12-23-38	1	8,650-60	‡2,900	0.85	53.6		21,494
			2-28-40	1	4,610-31					
			3-23-40	1	10,674-10,710					
			4- 3-40	1	10,895-10,905					
19	Bay Baptiste	Terrebonne	8-17-38	1	11,172-78	4,800	0.77	50		1,320
20	Bayou Des Allemands	St. Charles-La Fourche	8-12-38	1	9,453-63	‡4,200	0.87	59.8		241
21	Bayou Mallet§	Acadia	1- 4-36	2	7,190-7,210			46.5		
22	Bosco§	St. Landry and Acadia	-38	5	8,220-30	‡3,350	0.18	48		
					8,424-34	3,382	0.47	48		
23	Chalkley	Cameron	11- 3-38	1	8,562-69	‡4,200	0.59	52.9	745	4,717
24	China	Jefferson Davis	8-26-40	1	9,300-04		0.40	50		
25	De Large	Terrebonne	7-17-38	1	13,254-66	‡5,000	1.27	48.5	13,868	34,325
26	East Hackberry§	Cameron	7- 3-39	1	7,820-38			44		460
27	Gibson	Terrebonne	5-27-39	1	8,639-42	4,000	0.51	45.6		
28	Golden Meadow	La Fourche		1	8,555-65					
29	Iowa	Calcasieu	7-18-40	1	6,885-6,900		0.84	60.1		

(Continued on Next Page)

South Louisiana—(Continued)

Map Key	Field—	Parish—	Date of discovery	Number of wells	Depth of production (ft.)	Reservoir pressure (lb./sq. in.)	Recovery of condensate (G.P.M.)	Gravity of condensate (°A.P.I. cor.)	1938 production (bbl.)	1939 production (bbl.)
30	La Fourche Crossing	La Fourche	7-11-40	1	10,072-87	....	0.92	53	.....	.....
31	Lake Arthur†	Jefferson Davis	4-23-37	1	8,540-50	....	0.47	47		
			10-13-38	5	9,865-80	‡6,500	3.28	53.1		
				1	9,928-80	....	....	....	43,776	281,031
			1- 2-39	2	10,108-20	....	1.9	52.4		
32	Lake Barre§	Terrebonne	12-28-38	1	10,460-10,520	‡3,200	0.62	....	.....	.....
33	Lake Long	La Fourche	7- 4-38	1	10,416-19	....	1.79	51	.....	.....
			2-15-39	2	9,892-9,906	‡3,900	1.06	47	.....	.....
34	Lake Mongoulois†	St. Martin	12-26-38	1	9,675-95	‡3,800	1.4	54.2		
			10-28-39	1	9,952-70	....	0.8	....	.....	21,494
35	La Pice	St. James	4-19-39	1	10,234-66					
				1	10,900-40	‡5,930	0.67	45.6	.....	3,054
36	La Place	St. John the Baptist	11-25-39	1	11,340-55	....	0.50	47	.....	.....
			4-17-40	1	8,114-41	....	1.28	62.3	.....	.....
			10-23-40	1	8,890-8,900	....	1.03	56.2	.....	.....
37	Lirette†	Terrebonne	5-24-37	1	8,724-58	....	0.27	50.1	.....	.....
			10-17-38	6	10,520-24	‡4,500	0.10	....	.....	.....
38	North Elton	Allen	6-14-39	1	8,366-81	‡4,000	0.52	48.7	915	6,428
			7-21-40	1	7,272-92	....	....	55	.....	.....
39	North Tepetate†	Acadia	10-10-38	2	7,573-77	....	1.61	58.4	.....	.....
			12-11-38	3	7,960-70	‡3,800	1.0	56		
			4-16-39	1	8,508-19	3,948	1.4	56	8,162	59,187
			9- 3-39	1	8,876	‡4,600	1.4	44	.....	.....
40	Paradis	St. Charles	6-26-39	2	9,042-60	....	....	....	.....	.....
41	Perkins§	Calcasieu	8- 2-39	1	9,895-9,915	3,600	1.56	53.8	.....	6,435
42	Raceland§	La Fourche	6-30-39	1	7,038-42	....	0.30	....	.....	.....
43	South Elton	Jefferson Davis	8-25-37	1	10,120-38	....	0.56	46.9	.....	5,241
44	South Jennings†	Jefferson Davis	11-12-36	3	8,955-65	‡3,400	1.37	52	8,872	11,886
			12-13-39	2	8,638-48	3,921	0.80	51.6	6,492	32,989
			7- 8-40	1	9,503-18	....	1.13	46	.....	.....
45	University	East Baton Rouge	6-23-39	3	8,812-42	....	0.50	54	.....	.....
			4-24-39	1	4,345-60	1,957	0.16	38	.....	.....
46	Ville Platte†	Evangeline		7	7,145-75	3,266	0.70	57	.....	.....
47	West Gueydan	Cameron	7- 1-38	3	8,832-47				.....	.....
				1	7,140-50	‡3,200	1.4	62	.....	.....
48	West Hackberry	Cameron	5-10-38	2	6,966-78				.....	.....
49	West Mermenthau	Jefferson Davis	7-30-40	1	6,200-45	‡3,600	0.8	58	.....	.....
50	White Castle§	Iberville	7- 8-39	1	9,119-25		0.90	58	.....	.....
51	Woodlawn	Jefferson Davis	2- 2-38	1	8,740-50	‡3,800	0.92	45	.....	.....
				1	8,286-88	....	1.1	51	.....	.....
	Total			299	.....	....	....	....	1,990,322	2,232,235

*Data from Department of Conservation. †Recycling in operation or contemplated. ‡Estimated. §Possibly not a true condensate field. Further information necessary. Depth of production unfortunately means perforations in some instances and sand thickness in other instances.

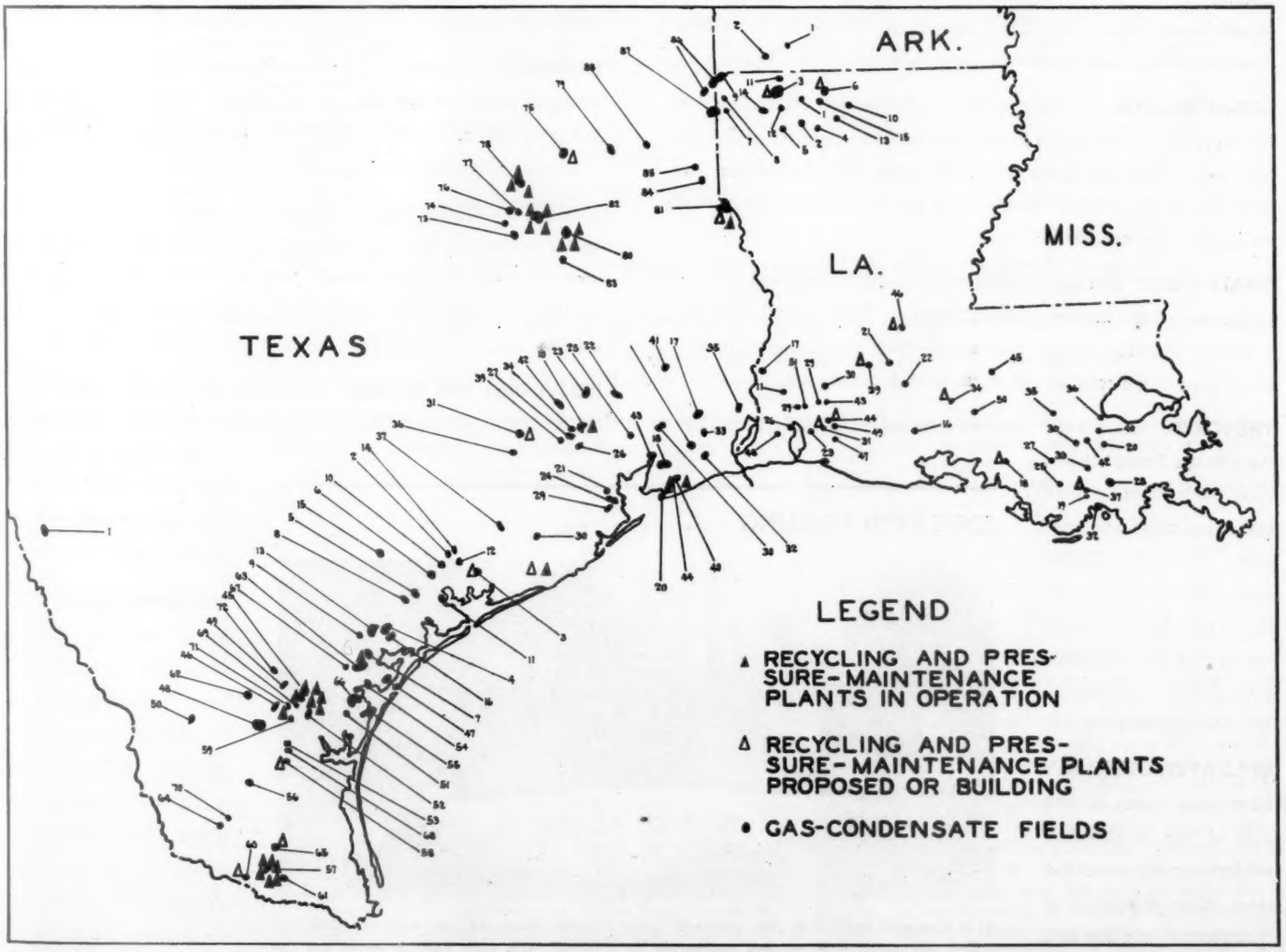


Fig. 2—Map showing locations of condensate fields and plants, the fields being identified in the accompanying tables

SPARKS . . . FROM THE NEWS

DEMAND: The posting of a price of $1.10 per barrel and the building of a short pipe line to a Michigan field shows what happens when demand exceeds the ready supply.

WILL IT? The big question in Washington is: Will the new Congress be another "rubber stamp"? The oil industry has much at stake in the answer to that question.

DEFENSE BUSINESS: Middle West industries, some with defense contracts, are buying more fuel oil. Incidentally the buying is ending the several-year lethargy of the Mid-Continent low-gravity fuel market.

OVERCOMING HANDICAPS: Owners have devised means to operate a part of a new pipe-line system serving southeastern states despite state and railroad opposition. This is the line which the Defense Commission would like to see operating 100 per cent.

COMMUNIQUES: A statistically minded reader informs us that his daily check of reports shows the refinery capacity of Europe has been destroyed three times. He adds that during the last week the rival air fleets concentrated on the refineries which will be constructed in 1986.

SMALL PART: Distillate producers have been blamed for many of the unwanted market developments in Texas and Louisiana. A survey of plants in this issue shows they still represent a very small part of the total oil production in those states.

THE JOKER: Service-station sales grossed $2,822,481,000 in 1939, the Census Bureau is just now estimating. This is an indicated business gain of $1,035,000,000 since 1929. The joker is that tax-collection gains accounted for $800,000,000 of this amount—increased business the rest.

STILL AT IT: Oklahoma's Okmulgee area is still one of the outstanding wildcatting regions of the state after 46 years of prospecting, and the end is not yet in sight.

RIGHT SIDE: The 300-million-gallon sale of liquefied gases in 1940 not only represented a large gain in volume but practically all of it was on the profit side of the ledger.

EXPANDING: Despite the governmental aid given some of its competitors, the natural-gas industry expanded its sales 9.5 per cent over the past year. A similar gain is projected for 1941.

PROVIDED: Year-end statements of the industry's leaders are in general agreement. With a large increase in demand assured they see a favorable 1941, provided—

VITALIZING RESOLUTIONS: The Interstate Oil Compact Commission at its Oklahoma City executive session Monday approved some more resolutions. 1941 plans call for vitalizing these resolutions with action.

PREPARED: Kansas and Oklahoma's great Hugoton gas field, which is traced on the map in the shape of a boot, can give the industry one of its big kicks if and when favorable marketing conditions develop.

MORE TO COME: Exports of aviation gasoline have fallen far below the anticipated war demands but maybe the condition will soon change. Military experts now say that planes are being supplied England and Germany at a much faster rate than the number shot down and that the "real" aerial war is ahead.

DELIVERING THE GOODS: Domestic refining companies have contracted to deliver 3,990,000 gal. of 100-octane gasoline to Army flying fields at an average price of 0.175 cents. Competitive nations can't get this fuel at any price.

NO BOTTLENECK: After more than a year of searching no bottlenecks have been found in the oil industry's operations which would slow up the nation's defense program. This raises the question as to why Washington still clamors for federal control of the industry's operations.

EDUCATED DRILLING . . .

At a three-well location on state university lands in Baton Rouge, La., one well was vertically drilled, the second was bottomed underneath the livestock farm some 2,000 ft. away and the third was drilled in the opposite direction for completion underneath the university campus

Liquefied Petroleum Gas Has Banner Year in 1940

By G. G. OBERFELL
Vice President, Phillips Petroleum Co.

SUMMARY

The liquefied-petroleum-gas industry continued its march of progress in 1940. The marketed production in the United States is estimated at 300,000,000 gal., an increase of 32.5 per cent over 1939. The number of retail customers using liquefied petroleum gas for domestic fuel is now well beyond the million mark, the estimated total being 1,125,000 at the end of 1940, an increase of 325,000. While the progress of the liquefied-petroleum-gas industry itself has been very gratifying it is interesting to note that, from the viewpoint of the petroleum industry the volume of propane and butane sold as liquefied petroleum gas is only 3 per cent of the potentially available supply and only 10 per cent of the amount of these gases blended into gasoline or made into motor fuel by polymerization processes. Any requirements for the synthetic-rubber industry probably will not exceed that consumed as liquefied petroleum gas. Use of liquefied petroleum gas for industrial fuel continues its healthy growth; its use by utility companies in recent years has been continuing at an accelerated but moderate pace. Uniform safety standards are fast being adopted throughout the country.

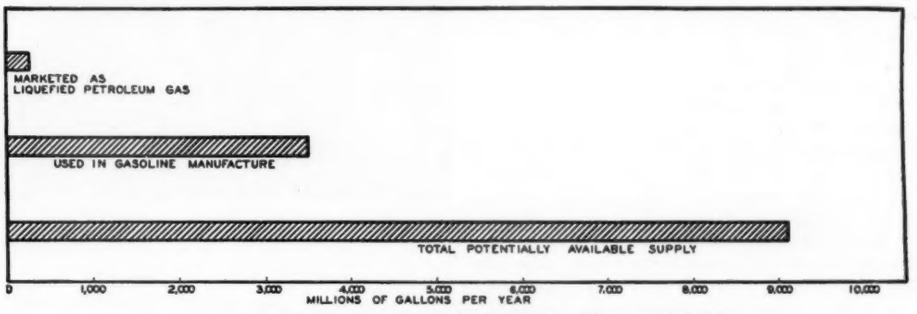
THE liquefied-petroleum-gas industry continued its march of progress in 1940. Table 1 shows the estimated marketed production of liquefied petroleum gas during 1940 with an indicated total of 300,000,000 gal. as compared to 223,580,000 gal. marketed in 1939, an increase of 32.5 per cent. Highly specialized sales efforts in the domestic field, increased industrial activities resulting from generally better business conditions, and to a minor extent from the national-defense program, account for much of this very substantial gain.

Table 2 and the accompanying chart are of particular interest in that they show the total potentially available supply of propane and butane existing at all sources as compared to the quantities moving through various channels of consumption. The program of the liquefied-petroleum-gas industry during the past year as well as during the last several years has been in itself very gratifying; but from the viewpoint of the petroleum industry as a whole it is important to note that the volumes of propane and butane marketed as such are only a relatively minor portion of the total supply and a small part of the amount used in motor fuel. About 3 per cent of the total potentially available propane-butane supply is sold as liquefied gas; and this amount is less than 10 per cent of the volumes of these gases used in the production of gasoline by blending or through various polymerization processes.

TABLE 2—DISTRIBUTION OF TOTAL POTENTIAL SUPPLY OF BUTANE-PROPANE IN UNITED STATES REFINERIES AND GASOLINE PLANTS*

	Millions of gallons per year				
	Marketed as L.P.G.	Used in manufacture of gasoline	Used in plant fuel gas	Left in residue gas	Total
Butane	170	†2,850	250	1,130	4,400
Propane	130	‡750	1,620	2,250	4,750
Total	300	3,600	1,870	3,380	9,150

*Estimated by writer. †By blending and polymerization. ‡By polymerization.



Demand for butane and propane in liquefied-petroleum-gas industry and in manufacture of gasoline as compared to potential supply

TABLE 1—MARKETED PRODUCTION OF LIQUEFIED PETROLEUM GAS

Year—	Total sales: Gallons per year	Total sales: Per cent increase over previous year	Distribution—Gallons per year: Retail (bottled gas)	Per cent increase over previous year	Industrial and miscellaneous	Per cent increase over previous year	Gas manufacturing	Per cent increase over previous year
1922	222,641	...						
1923	276,863	24.4						
1924	376,488	36.0	Sale of liquefied petroleum gas confined primarily to bottled-gas business prior to 1928					
1925	403,674	7.2						
1926	465,085	15.2						
1927	1,091,005	134.6						
1928	4,522,899	314.6	2,600,000	...	400,000	...	1,500,000	...
1929	9,930,964	119.6	5,900,000	126.9	1,500,000	275.0	2,500,000	66.7
1930	18,017,347	81.4	11,800,000	100.0	2,200,000	46.7	4,000,000	60.0
1931	28,769,576	59.7	15,294,648	29.6	7,171,686	226.0	6,303,242	57.6
1932	34,114,767	18.6	16,244,103	6.2	8,167,194	13.9	9,703,470	53.9
1933	39,931,008	14.1	16,625,588	2.3	13,987,095	71.3	8,318,325	−14.3
1934	56,427,000	44.9	17,681,000	6.3	32,448,000	132.0	6,298,000	−24.3
1935	76,855,000	36.2	21,380,000	20.9	47,894,000	47.6	7,581,000	20.4
1936	106,652,000	38.8	30,014,000	40.4	67,267,000	40.5	9,371,000	23.6
1937	141,400,000	32.7	40,823,000	36.0	89,402,000	32.9	11,175,000	19.3
1938	165,201,000	16.7	57,832,000	41.7	94,983,000	6.2	12,386,000	9.8
1939	223,580,000	35.3	87,530,000	51.3	120,615,000	27.0	15,435,000	24.6
1940	300,000,000	32.5	128,000,000	46.3	153,000,000	27.0	19,000,000	23.4

Remarks: In the above table "Total Sales" for all years except 1940 were obtained from U. S. Bureau of Mines reports. "Distribution" for the years 1931 to 1939, inclusive, was obtained from the same source. All other volumes are estimated by the writer. The total sales volume includes all liquefied petroleum gases (propane, butane, and propane-butane mixtures) when sold as such. It includes the sale of pentane when sold for any purpose other than motor-fuel blending. It does not include butane when blended with heavier petroleum fractions for motor-fuel purposes. Intercompany sales transactions, such as purchases of liquefied petroleum gases by one company from other companies and then resold as liquefied petroleum gases, have been eliminated in order to avoid duplication of sales figures. The data do not reflect sales of liquefied petroleum gases used directly by the producer at the point of production, for fuel, polymerization, solvent, dewaxing, etc. Neither do the figures include sales of gaseous mixtures of hydrocarbons delivered by pipe line to the few large chemical plants which are adjacent to the points of production of these raw materials; such sales are included if liquefied petroleum gases are in liquid form when sold.

The estimate for 1940 consumption of liquefied petroleum gas for home uses amounts to 128,000,000 gal., which is an increase of 46.3 per cent over the previous year. On the basis of the best information available, the number of new home users of liquefied petroleum gas increased approximately 325,000 during the year, the largest increase secured in any year. Territories where buried or underground systems are more commonly used account for about 50,000 of these new customers, a larger portion being acquired by distributors employing aboveground or replaceable cylinder systems. This year's record is important in another respect also since it is the year in which the number of retail customers passed the million mark, the estimated total now being 1,125,000. Greater public acceptance of liquefied petroleum gas as a domestic fuel due to improvements in economy, efficiency, variety and convenience of gas-consuming appliances, increased sales efforts, a larger number of distributors and larger advertising expenditures have

been important influences in expanding home use of these highly efficient fuels. In many sections of the South and Southwest where distribution is from nearby manufacturing centers, the number of rural and suburban homes completely equipped with liquefied petroleum gas for cooking, water heating, refrigeration and house heating is showing rapid development. In many sections of the country, the competition of electricity for cooking has been reduced materially. Electricity remains, however, the chief competitor of the liquefied-petroleum-gas industry in the home for cooking, refrigeration, and, to a lesser extent, for automatic hot-water heating.

The acceleration in the nation's industrial output experienced in 1939 continued during the year just past. Higher industrial activity has required more fuel in the form of butane and propane and, with an increased number of users in the industrial field, the liquefied-petroleum-gas industry has shared in the increased volume of business, as is evidenced by the estimated 27 per cent gain in industrial sales volume.

A number of noteworthy installations were made during 1940 in industrial plants where natural gas in the past has been available from fields now showing rapid declines, liquefied petroleum gas is standing by as an emergency fuel or is completely replacing the diminishing natural-gas supply. Several new industrial plants have been equipped to use butane or propane as fuel, some of these being in locations where manufactured or natural gas is not available.

Internal-Combustion Engines

The use of liquefied petroleum gas in the operation of internal-combustion engines on construction equipment, well-drilling rigs, railroad locomotives, and railroad passenger-car air-conditioning and electric-generator units continues to be an important factor in the expansion of the industry's markets. Butane-fueled irrigation pumping engines in Texas and New Mexico are being installed at an increasing rate. The railroads continue to expand their use of liquefied petroleum gas as a motive-power fuel in gas-engine-operated motor cars and small trains, and are finding increasing advantage in the use of propane for cooking and water heating in dining cars and for the operation of car air-conditioning and electric generating units. It appears that for small locomotive-power units for railroad use, liquefied petroleum gas offers many advantages because of fuel economy, lower engine maintenance costs and particularly low initial investment.

California Increases Use

In California, the use of liquefied petroleum gas in internal-combustion engines on construction equipment and to a certain extent on heavy-duty transport trucks continues to increase. Similar applications in the Mississippi Valley are developing slowly. In sections of Oklahoma, New Mexico, Texas and Louisiana where substantial amounts of liquefied petroleum gas are hauled long distances by tank truck, the truck engines in the majority of cases use liquefied petroleum gas as fuel.

The use of butane and propane by the gas industry in small city gas plants and in certain other applications in larger gas-manufacturing plants continued to show some increase as indicated by the 23.5 per cent gain over the 15,435,000 gal. used in 1939 to an estimated 19,000,000 gal. in 1940. The merchandising of liquefied petroleum gas by utility companies beyond their gas mains has shown no development worthy of comment. It appears that existing liquefied-petroleum-gas distributors are doing an excellent job of handling this type of market, particularly in the metropolitan and suburban areas surrounding the larger cities. The use of butane and propane as natural gas substitutes during peak demands continues to be of increasing interest to the utility-gas industry and it is expected that substantial volumes will be required for this purpose during the present winter months. The use of propane and butane by utility companies to meet peak-load gas demands has shown that many economic and operating advantages can be gained by such methods of producing substitute gas.

The manufacture of synthetic rubber from petroleum products received considerable publicity during 1940. Certain synthetic-rubber processes now operating are utilizing hydrocarbons as the base raw material and only future developments will serve to indicate the quantity of such hydrocarbons that will be needed. It may be stated, however, that potential sources will be more than sufficient for any near-future synthetic-rubber demand and the quantities required for some time will probably not exceed an amount equivalent to that now being marketed by the liquefied-petroleum-gas industry.

One of the country's largest liquefied-petroleum-gas manufacturing plants

Safety Record Good

The industry continues to enjoy a fine record of safe practices in the storage and distribution of its products. The latest safety standards adopted by the National Board of Fire Underwriters and published in July 1940, incorporate all of the various standards formerly published separately. Those organizations that cooperated with the National Board of Fire Underwriters in this work are deserving of commendation. It is gratifying to note that the following states have part or all of the National Board of Fire Underwriters' standards in their liquefied-petroleum-gas safety codes: Minnesota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, Arkansas, Alabama, Louisiana, Mississippi, Kentucky, Tennessee, Ohio, Michigan, Indiana, and New Mexico, with California now considering revisions of its existing safety code. Future efforts in the promotion of safety, particularly education of personnel and of newcomers in the industry, are worthy of most serious consideration by those responsible for the management of this industry.

The Interstate Commerce Commission is placing in effect January 7, 1941, revised regulations for the transportation of hazardous commodities in which are included for the first time specifications for the construction of fusion-welded high-pressure tank-car shells. This places on the approved list tank cars recently constructed by fusion welding which have been operated on an experimental basis. This is an important change in tank-car specifications permitting the use of the most modern methods in building this type of equipment.

The Interstate Commerce Commission issued regulations effective June 15, 1940, covering the transportation of liquefied petroleum gas by common and contract truck carriers in interstate commerce. With only minor modifications, the regulations of the Interstate Commerce Commission follow closely those safety practices long used by the industry, which is certainly a recognition of the high standards maintained and the splendid safety record experienced in the tank-truck distribution of these products.

Transportation Facilities

A recent survey of special railroad tank cars used for the transportation of butane and propane shows a total of approximately 1,200 cars now in service with additional units under construction as this article is written. Because of high-pressure shells and insulation this type of equipment is considerably more expensive than is the ordinary gasoline tank car and the approximately 1,200 units therefore represent a very substantial investment and a definite indication of confidence in the future of the industry by the owners.

This young industry can be proud of its fine record which enables rural and suburban American families to have the modern conveniences of gas cooking, water heating and refrigeration; which furnishes a highly refined fuel for large and small industrial plants and which has contributed so much to the comfort of travel in modern passenger trains. Continued success and progress in the future can be assured by proper attention to economics, by aggressive merchandising and by careful observance of established safety standards.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

Hydrocarbon—Compound of the Year

If there were a compound of the year the 1940 award would go to hydrocarbon by a wide margin.

Webster defines hydrocarbon as a "compound of hydrogen and carbon" and lets it go at that. But thousands of producers, manufacturers and technologists of the petroleum and natural-gas industries are constantly giving new and wider meanings to the chemical term with outstanding accomplishments to point to over the past several months.

How hydrocarbons found in and obtainable from liquid petroleum and natural gas stand with many millions of consumers is apparent from the demand figures for the year which ended Tuesday.

In this country per capita consumption of petroleum passed 425 gal. with gains in individual products ranging from 2 to 22 per cent. More gasoline, kerosene, distillate and gas oil were consumed than during any previous year.

Compared to 1929—to which most industries have to look back for their biggest year—1940's petroleum requirements in the United States increased 40 per cent with a 50 per cent gain in motor fuels.

Demands for the lighter hydrocarbons furnished by the natural-gas industry were equally impressive. Domestic, commercial and industrial uses expanded 9.5 per cent with this essential service going into tens of thousands of new homes, plants and commercial enterprises.

Sales of liquefied gases—products of both the petroleum and natural-gas industries—passed 300 million gallons, a 300 per cent increase in 5 years.

The growth of the markets for these hydrocarbons is explained by improved products, low prices and complete services which have become largely automatic so far as the users are concerned. All these services have been made available to the defense program minus any bottlenecks.

As to quality through perfections in processing methods the premium motor fuel of yesterday is the regular-grade fuel of today so that designers have improved their engines enabling them to enter new power fields and to expand the old.

Liquid storage of its products at 250° below zero to assure the peak winter needs—a 1940 development—is indicative of what the natural-gas industry is doing. Prices in both industries were again lowered.

So much for the principal outlets. Chemists and plant operators are taking these same hydrocarbons and through the application of new arts are manufacturing synthetic products for new markets. While they are considered byproducts, some have been expanded to the point where they would be major enterprises in many other industries.

What these products of research mean to this country became apparent as soon as the defense program got under way. When a shortage of raw rubber loomed, petroleum chemists moved from the laboratories to plants and a large-scale commercial production of synthetic rubber was inaugurated.

Governmental investigators looked around and found that the petroleum industry was better prepared than any other to manufacture explosive materials and that operation is expanding apace.

An effective aviation program required the synthesis of other hydrocarbons in order that the military would be assured 100-octane gasoline and the output of that fuel is being increased more rapidly than the planes which are to use it.

These are the accomplishments which took the headlines in 1940 and there are others equally important in the offing. The petroleum and natural-gas industries are to be called upon for more of all their products. 1941 will be another hydrocarbon year.

STATE CAPITALS...

ILLINOIS

WHILE MOST OF THE DRILLING has been completed in the Salem field, the dispute over the strip leases in the area was being continued when the Illinois Supreme Court was asked last week to settle a dispute over oil and gas rights on land in Marion County. T. E. Rhomberg of Dubuque, Iowa, and 11 others appealed from a decision of the Marion County Circuit Court which dismissed their suit seeking an injunction to restrain the Texas Co. and T. D. Stroup from drilling for oil on a strip of property in the Lake Centralia field. Mr. Rhomberg contended that he had reserved the mineral rights when he conveyed the land to others, who later assigned the lease to the Texas Co.

TEXAS

A TOTAL OF 223 NEW LOCATIONS were approved by the Railroad Commission during the week ended December 28, according to a report issued by the Oil and Gas Division on Monday. This total compared with 234 drilling permits the previous week and 254 the week before that. In the week just ended, locations in exception to state-wide spacing rules increased, while permits for regular locations declined.

East Texas for the second time in 1940 led all other districts in the number of new locations staked, a total of 63 being issued, all of which were in exception to state-wide spacing rules. Southwest Texas, which led the state in the previous week with 51 drilling permits, ranked second with 56 new locations. North Texas received 32 locations as compared with 35 the week before; West Texas, 29 as against 26 the previous week; Panhandle, 15 compared with 11; Gulf Coast, 12 against 32; West Central Texas, 10 compared with 19; and East Central Texas, 6 compared with 17 the week previous. In East Texas, 50 of the 63 permits issued were in Gregg County, 10 were in Rusk and 3 in Upshur.

STATE REGULATION of oil and gas production has resulted in Texas having 3,502 more independent oil operators than in 1932, Railroad Commission Chairman E. O. Thompson revealed Saturday. In 1932 there were 2,838 operators and 43,630 wells in Texas, he said, whereas at the end of 1940 there were 6,340 operators and 92,053 wells. He also called attention to well-spacing regulations, which formerly stood at one well to 2½ acres as compared to the current state-wide rule of 20-acre spacing.

VERDICTS RENDERED IN FIFTY-THIRD District Court at Austin last Saturday by Judge Ralph Yarborough gave defendant oil firms a total of 383 acres out of approximately 500 contested by the state as belonging to the public school lands. Of the six tracts in question, valued at $26,000,000 and all in the Hastings oil field, Brazoria County, Judge Yarborough ruled that three tracts were state property and three tracts holding a reported 55 wells belonged to the defendants.

The suit was that of the state filed in December 1938 against Franco-American Securities, Ltd., Canadian firm, three major oil companies and approximately 250 independent oil companies. One tract of 189 acres, which a jury had previously ruled for the state, was held to belong to the defendants. Stanolind Oil & Gas Co. was the major owner in this tract, it was reported.

Trial of the suit was began before Judge Yarborough early in October. Originally it included a state claim for the oil taken from approximately 30 wells. Litigation over the oil was severed from the suit, however, to be made the basis of another suit. Title questions were submitted to jurors on "special issues." Judge Yarborough's judgment is based on the jury answers to these disputed points.

The land was part of leagues granted to Stephen F. Austin and his sister, Mrs. James F. Perry. It has been transferred since their day to various holders including defendant Franco-American Securities, Ltd. The state claimed the land was a vacancy existing between surveys and that, therefore, it belonged to the state permanent school fund.

MISSISSIPPI

MISSISSIPPI'S OIL AND GAS BOARD on Monday relaxed its spacing regulations in the Tinsley field of Yazoo County to allow R. J. Wheelan to drill wells at three locations on railroad rights-of-way in the field. Mr. Wheelan had charged property leased by him on all sides of the rights-of-way in the field was being drained by E. C. Johnston and the Slick-Urschel Oil Co.

Asserting that efforts to pool his acreage with other operators had proved futile, he contended the drilling of the three wells on the railroad right-of-way and on less than the 40-acre units which the state's spacing regulations require, provided the only alternative for protection against drainage.

NEW TEXAS COMMISSIONER . . .

***OLIN CULBERSON** will take over the duties of railroad commissioner of Texas on January 2, succeeding Lon A. Smith who did not seek reelection after serving on the body for 16 years. Mr. Culberson, who was born in Turnersville, Tex., in 1886, served as chief of the Gas Utilities Division of the Railroad Commission from 1932 to October 1939. In 1934 and 1935 he was asked to take over the enforcement of oil conservation, and as "director of pipe lines" he was charged with working out and installing the first oil-tender system. Thus he comes to the commission well versed in its activities. Prior to becoming affiliated with Gas Utilities Division in 1932, Mr. Culberson served as deputy clerk, two terms as county clerk and two terms as county judge in Hill County, Texas. In 1912 he married Miss Mary Lou Rochell of Hubbard, Tex., who served as campaign manager during his recent campaign. Mr. Culberson is an ardent hunter and fisherman*

CALIFORNIA

NEW LITIGATION centering around the Kettleman North Dome field of California is scheduled to get under way early in January unless a last-minute delay develops. This suit is one to determine whether the secretary of interior has the power to fix the price paid by operators in the Kettleman North Dome field to the federal Government for royalties. The secretary of interior, who has delegated several deputies to handle the case, charges that the prices paid are too low. This will be an interesting case because Kenda has paid its royalties on the same basis that it is paid by purchasing companies for crude oil, natural gas and natural gasoline. The original trouble began a year or two ago and for this reason the cumulative amount will be large. This is the first time on record that a lessor has challenged the right of an operator to sell production at regular posted prices and then refuse to accept the same price paid by the purchasing company. The case will no doubt be very complex as the composition, characteristics and value of Kettleman crude from a refining standpoint will be brought out.

IN A MOVEMENT apparently running counter to threats of federal regulation of the petroleum industry, the Oil Producers Agency of Los Angeles has announced that it is asking the California Legislature to adopt an enabling act which will permit the oil industry of that state to join the Interstate Oil Compact Commission. Copies of a resolution in which the agency asks that such legislation be adopted were mailed to all members of the legislature and to Governor Olson and Richard Sachse, state director of natural resources. Pointing out that California already has legislation to regulate spacing of wells, protect oil sands from water invasion, and do away with fire hazards, the agency expresses the belief that membership in the Oil Compact Commission would assist in the conservation of oil and gas.

"California, through its natural resources code and its Division of Oil and Gas, which administers the code, already has the requisite legislation on its statute books," L. L. Aubert, president of the agency, said. "For us to join the compact requires only the passage of an enabling act by the state legislature. California can become a member of the compact with no further legislation, and can function as a full member state under the voluntary conservation program now in effect here."

KANSAS

THE CORPORATION COMMISSION OK KANSAS on Saturday took under advisement the state's January allowable production after receiving purchaser nominations totaling 183,561 bbl. daily for the month at a market-demand hearing held in Wichita. Conservation Director Theo A. Morgan, in listing nominations, however, told the commission that the nominations did not reflect the true consumptive demand for the reason that the companies nominate less oil than they expected to purchase. Mr. Morgan told the commission that "the overall picture for Kansas is very bright, with prospects for an increasing demand for crude." Market demand for Kansas crude oil in January is estimated by the Bureau of Mines to average 191,000 bbl. daily, an increase of 2,600 bbl. over its December estimate.

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Then, if I want to make a sound conclusion, it's up to me to start kicking over a few doubts.

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Oil Commission Recommends Pattern Conservation Law

By H. STANLEY NORMAN

Groundwork for expansion of Interstate Oil Compact Commission activities has been virtually completed. The program now awaits prosecution. A pattern law was received at the Oklahoma City meeting December 30 and now goes out with the recommendation that all producing states consider it as a guide in framing conservation legislation.

OKLAHOMA CITY, Okla., Dec. 31.—Full and careful consideration of a pattern oil-conservation law was recommended to producing states here Monday by the Interstate Oil Compact Commission. The pattern law, which closely parallels the Arkansas statute, was recommended to the oil-producing states as an aid in enacting conservation legislation.

Numerous insertions, deletions and additions were made in the original draft of the pattern law prepared by the legal committee so that the varied conditions existing in the producing states would be covered adequately. The pattern law provides numerous options in the approach to conservation. Any one or all of the optional provisions, so attorneys believe, will accomplish the result of conservation which is the declared purpose of the Compact Commission.

Provision was made by the commission to embrace representatives of additional governmental agencies and trade associations by amending the bylaws. Invitation was extended for future attendance of authorized representatives of the Department of the Interior, regulatory bodies of the producing states, the governors of nonmember states and each national oil-trade association whose members are engaged in producing oil and gas.

Voluntary participation in the financing of the expenses incurred or to be incurred by the compact was requested of each member state. No specific recommendation was made by the committee on the plea that it lacked necessary information and knowledge as to the additional activity which may be involved by way of expense. The recommendation was made, however, that contributions should be in proportion to the amount of oil produced and sold by each state.

Federal Agency Participation

Federal-agency participation in Compact Commission activities was made possible for a dual purpose. In the first place, the commission wants the benefit of the Bureau of Mines' economic and technical data and, in the second place, the commission wants to quiet the cry for federal regulation. Theoretically, the Department of the Interior participation in compact deliberations should afford a bill of particulars on the frequent indictments against waste in the industry voiced by Secretary Ickes.

Restatement of Secretary Ickes' plea for federal control in his annual report to the president over the past week end drew rebuttal from Gov. Leon C. Phillips of Oklahoma, chairman of the Oil Compact Commission. The chairman took exception to the need for federal intervention in the regulatory program and criticized sincerity of the national-defense issue in view of the complete preparation for emergency by the oil industry.

The day-long meeting in Oklahoma City was executive. Several nonmembers of the commission and its various committees were invited to attend the discussion. Representatives of the trade and daily press, however, were invited to disassociate themselves with proceedings before the formal meeting started.

The recommendation that compacting states share in financing commission activities, if accepted, will mean that member states will contribute in approximately the following proportions: Texas, 50 per cent; Oklahoma, 18; Illinois, 15; Kansas, 9; Michigan, 2; New Mexico, 5; and Colorado a fraction of 1 per cent. The finance committee reported that Oklahoma has paid all expenses of maintaining the compact and that the expense for 1940 will be approximately $15,000. Out of the Oklahoma maintenance fund comes the salary of Charles Orr, secretary, and his staff; fees for W. J. Holloway, attorney and assistant representative of Oklahoma, and expenses incident to traveling and the meetings.

Advisers and counselors from the new agencies were extended the privilege to attend all open and executive sessions of the commission, the privilege of furnishing all available information and data relating to conservation and prevention of waste and to make suggestions concerning the program and work of the commission.

"Each representative," states the enabling article added to the bylaws, "shall file with the secretary of the commission his credentials in writing."

The pattern law accepted by the commission assumes the formal status of a recommended guide for future conservation legislation in all oil-producing states.

One of the deviations from present conservation laws in several producing states is a clearer definition of "reasonable market demand." The term is defined as meaning the demand for oil or gas for reasonable current requirements for current consumption and use within and outside the state, together with such amounts as are reasonably necessary for building up or maintaining reasonable storage reserves of oil or gas or the products thereof, or both such oil or gas and products.

Troublesome Texas Problem

The pattern law deals specifically with one of the problems that has been most troublesome in Texas regulatory practice. A section prohibits consideration of purchasers' nominations in establishing allowables and restricts the regulatory body to consideration of the state as a whole rather than by individual pools. This section is designed specifically to eliminate so-called selective purchasing.

"We consider that the report," said a resolution of the commission referring to the legal committee's effort, "embodies the best cumulative experience in conservation, safeguarding the rights of the public, properly regulating the industry, complete enough to cover the subject and concise enough to be practical in administration. We trust that the legislatures of the oil-producing states will find it helpful."

The committee drafting the pattern law was composed of Earl Foster, chairman, attorney for the Oklahoma Corporation Commission, assisted by James C. Hamill; Harold J. Medill, attorney for the Kansas Corporation Commission, assisted by Jack Jones; Robert E. Hardwicke of Fort Worth, Tex., assisted by Maurice Cheek; P. J. Hoffmaster, director of the Michigan Department of Conservation; Carl B. Livingston of New Mexico, assisted by Hiram M. Dow and Warwick M. Downing of Denver, Colo.

Representatives of all compact-member states attended the Oklahoma City meeting, except Mr. Hoffmaster.

Word came from California this week that the Oil Producers Agency has recommended to Governor Olson and Richard Sachse, director of natural resources, that the state join the compact. The agency points out in resolutions mailed to all members of the legislature that no additional laws are necessary for full-member participation in the compact. The purely advisory status of the Compact Commission is offered as an answer to objections to imposed regulations which have been repudiated several times by the California electorate.

Richard Sachse, director of natural resources in California, is the probable oil-compact representative from that state if favorable action is taken on recommendation of the Oil Producers Agency

Busy Calendar Awaits Opening of New Session of Congress

By HENRY D. RALPH

WASHINGTON, D. C., Dec. 31. — This week ends the longest session in the history of Congress and ushers in the Seventy-seventh Congress which promises to sit just as long and be even more eventful.

Dominating the new session will be the problems of national defense and the threat of war. The administration's policy will be outlined by President Roosevelt's annual message on the state of the union next Monday and his third inaugural January 20. In the main the new Congress probably will adhere to this policy, but it will have certain ideas of its own and will insist on taking at least an equal part with the executive branch in working out the details of the defense program.

In this respect Washington observers are revising their postelection predictions that we would have another "rubber-stamp" Congress. The president is still as much of a leader as ever and the Democrats retain a comfortable majority in Congress—slightly less in the Senate, slightly more in the House—but the spirit of independence which the "lame-duck" session has shown during the past few weeks is expected to carry over into the new Congress. President Roosevelt appears to be aware of this for he is taking congressional leaders into his confidence more than he used to. It remains to be seen whether the defense crisis and the spirit of national unity will bring close cooperation between the White House and the Capitol or whether Congress will kick over the traces and itself fix the outlines of our national policies.

Along with the defense program, probably tied into it, will be proposals for new legislation for federal regulation of business activity and individual initiative, the Cole bill for federal control of petroleum production, for example. The attitude of Congress will not be consistent on this, for some measures may be rushed through while others are killed, but the trend of national legislation is still toward more regulation from Washington and the defense program will accelerate this trend.

To Investigate Defense Program

A thorough investigation of the defense program will be demanded as soon as the session opens, coupled with bills to create various sorts of administrative bodies to replace the present National Defense Advisory Commission. The administration will do its best to prevent any such action, and the president's recent move in setting up a four-man production office was an attempt to forestall congressional demands for more centralized authority. A compromise probably will be worked out under which committees of Congress will keep a constant watch on the defense program in a continuous and generally sympathetic investigation of current developments.

One of the first angles of the defense problem to be raised in Congress will be labor troubles in defense industries and the 40-hour week. This will involve a fight, for the administration and organized labor will defend the status quo, contending that labor's right to strike must not be impaired and that overtime wages must be paid for all work beyond 40 hours in order to stimulate the training of new skilled workers and the absorption of the unemployed. Through Defense Commissioner Sidney Hillman, the administration is attempting to keep labor troubles from becoming acute by inducing greater use of conciliation and negotiation, putting pressure on employers to accede to reasonable demands of labor, and persuading union leaders not to call strikes without warning. While sympathetic to labor's desire for higher wages, the administration will frown on attempts to jack up wages in certain industries above the level of wages for comparable work elsewhere in the fear that this might set off an inflationary spiral of increased prices for all commodities. Many members of Congress, however, are outspoken in criticizing union rules requiring high initiation fees and working schedules under which union members regularly get overtime and double-time wages, and there will be bills to curb the right of labor to strike in defense industries.

Status Quo on Labor Bill

If the administration is successful in preventing Congress from curtailing the present rights of labor in defense industries, and the chances are it will be, there will be little likelihood of any general revision of the wage and hour law, Wagner Labor Relations Act, or Walsh-Healey Government Contracts Act. However, labor legislation will be a subject of almost continuous debate even though no action is in prospect in the near future.

In addition to our own defense program, President Roosevelt is now proposing that we take over all future orders of the British Government. Congress will probably approve the necessary legislation and appropriations after some debate, but there is a considerable group in Congress which will insist that our aid to Britain be kept "short of war." There seems to be little opposition to aiding Britain, including the president's new "dollarless debt" plan, provided this aid does not take the form of an overt act of war, but there is a fear that the president may take this country so far out on a limb that war will be inescapable, and therefore aid to Brtain will be closely scrutinized in Congress.

Forecasts of the budget to be presented to Congress next week indicate that the total expenditures will be around 17 or 18 billion dollars, with normal government expenditures kept down to around 7 or 8 billion dollars and balanced by revenues, and some 10 billion for defense and British aid covered by borrowing. Congress will go through the motions of trying to pare the "regular" budget below estimates, but the spending program is well entrenched and the general policy is not to let the defense program interfere with the New Deal's social program, so no important economies are to be expected. To cover the deficit Congress will raise the debt limit to 65 billion dollars, or more, will authorize a drive to sell government bonds directly to the public instead of financing the treasury through sales to banks, and will raise taxes.

An increase in the federal gasoline tax should be anticipated, for while the administration is still opposed to a general sales tax it will keep the present "temporary" manufacturer's excise taxes and there will undoubtedly be a strong attempt to increase the rates on many of these. A new revenue bill will not be framed until after March 15 when an analysis can be made of the returns under the two 1940 tax laws. Corporation income taxes, both normal and excess-profit, are certain to be raised substantially, and the administrative provisions will be revised along the lines of the treasury's program to plug all possible loopholes for tax avoidance and to tax large corporations more heavily than small ones. Probably about a billion dollars additional revenue will be sought in the new tax bill.

Federal Regulation

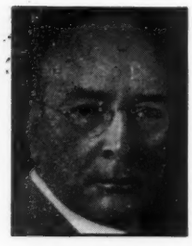
Important proposals for federal regulation of business will soon be coming out of the Temporary National Economic Committee, which has been given until April 3 to complete its final reports. These recommendations may take several forms and many of them may never receive serious consideration, but they will undoubtedly include measures for controlling "monopolistic trends" and the concentration of economic power in a few large companies. Recommendations on the oil industry will be watched with special interest for the T.N.E.C. spent more time studying the oil industry than any other single subject and may well propose something designed as a "model" for other industries. Whether or not the rest of the T.N.E.C. agrees, Senator O'Mahoney will press for action on his bills to require federal incorporation of all companies doing business interstate and to impose heavy fines and economic penalties on corporations and their officials convicted of civil violations of the antitrust acts. The antitrust laws may well be given an overhauling, as there is a growing belief that some sort of system should be worked out to give federal sanction to plans of industry operation which seem in the public interest though technically combinations in restraint of trade. The old N.R.A. will not be revived, but something faintly resembling it may be advanced.

Federal regulation of the oil industry will be pushed harder than ever on the grounds that it is necessary for national defense, and Representative Cole's committee probably will reach an agreement on a revised bill by early spring. Unless opposition from the oil-producing states is lessened, however, the administration will have to exert tremendous pressure to get through an oil-control bill within the coming year. Bills to divorce oil pipe lines and marketing from other branches of the oil industry will also be pushed with the support of the administration, and their fate is probably tied up with whatever general policy of business regulation is adopted by Congress as a result of the T.N.E.C. recommendations.

Industry's Leaders Find Outlook Favorable at Year's Start

Reduced Exports Significant Factor of Last Year

By W. S. FARISH
President, Standard Oil Co. of New Jersey



ALMOST significant change in the petroleum industry during 1940 was the large reduction in exports caused by the war. Exports of crude and all products decreased 32 per cent. The volume of Atlantic and Gulf Coast exports decreased more than total exports, or by 52 per cent. At the present time, shipments to Europe are confined primarily to Great Britain.

Domestically, the industry expanded. Crude-oil production increased 6.6 per cent to reach a new high of 3,700,000 bbl. per day. Refinery runs increased only 4.2 per cent, and this, plus reduction in exports of crude, will result in an addition to crude-oil stocks of approximately 25,000,000 bbl. This reverses the trend of the 2 preceding years, when substantial drafts were made on crude-oil stocks above ground. Such stocks, estimated at 277,000,000 bbl. on December 31, are somewhat higher than necessary, as evidenced by the level existing at the same time last year of 252,000,000 bbl.

Total 1940 domestic demand for petroleum products will be about 7.2 per cent over the previous year, with lubricating oil showing the smallest gain (1.4 per cent) and gas oil and distillate the largest percentagewise (17.2 per cent). Considering the loss in exports, the total demand for crude and petroleum products will be about 2 per cent higher than in 1939. Domestic gasoline demand for the year should approximate 589,000,000 bbl., or 6.3 per cent over last year, and total demand after considering the reduction in gasoline exports will approximate 2.4 per cent over 1939 total demand. At the end of the year finished and unfinished motor-fuel stocks, estimated at 85,000,000 bbl., will be approximately 2,000,000 bbl. higher than at the close of 1939. Estimates of adequate minimum working levels of motor-fuel stocks are variable, but on the basis of the average of such estimates the above stocks as of the first of the year will be at least 15,000,000,000 bbl. on the high side.

There has been a steady increase in gasoline stocks over the last 6 years. On January 1, 1934, these were 52,500,000 bbl., or 32,500,000 bbl. less than now on hand. It will be remembered that gasoline stocks increased substantially over and above the normal seasonal accumulation during the fall of 1939, and the first quarter of 1940, partly because of the anticipated war demand, which did not materialize, and partly because of excess gasoline production obtained when crude was run to produce additional heating oils. It is apparent that this accumulation which took place has not been corrected. This is reflected by present low prices in the wholesale-gasoline markets, as well as the fact that the average service-station price of gasoline, ex tax, on December 1, 1940, was 12.09 cents a gallon, which is the lowest it has ever been at this time of the year. Crude prices have remained at substantially the same level as in 1939, despite the generally lower product prices.

Heating-oil stocks are now some 10,000,000 bbl., or 30 per cent, greater than they were a year ago, and are adequate to meet demands, even if the weather this winter should be as cold as that of the abnormal winter last year. During the year industry demonstrated its ability to increase yields on heating oils, and thus meet additional demand requirements without adding unnecessarily to gasoline supplies. The use of distillate oil for domestic heating purposes continues to expand at a rapid rate, as evidenced by the 21 per cent increase in domestic burner sales estimated for 1940.

The increase in the use of distillate fuels for domestic heating has resulted in creating a higher requirement for tanker transportation from the Gulf to the Atlantic seaboard in the winter than in summer. This emphasizes the importance of accumulating stocks of such oils on the Atlantic seaboard during the summer months to avoid such peak requirements.

In the coming year increased business activities should occasion a greater increase in total consumption than occurred for 1940 over 1939, despite the fact that exports are not expected to gain. From a statistical standpoint, stocks of crude and products, particularly gasoline, are high in relation to demand. This position, however, would seem to be within the range of reasonable adjustment in refinery-crude runs and crude-oil supplies to bring about a balanced situation.

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Petroleum Ready For Any And All Demands

By EDWARD G. SEUBERT
President, Standard Oil Co. of Indiana

THE oil industry faces the uncertainties of 1941 fortunate in having had long experience in meeting new and additional demands for service. It is prepared to tackle whatever part it may be called upon to play in the national-defense effort. With good management, unimpeded, it can fill any likely demand for petroleum products for military operations without seriously restricting supplies to the civilian population.

That even the normal demand for products will show another gain in 1941 seems probable on the basis of present information. But the industry has the crude oil, the transportation facilities, the refinery capacity and the distribution system to handle all anticipated business. In addition it will branch out through its research and development organizations as its services are needed into such fields as those of supplying materials for explosives and synthetic rubber.

Prices have not increased with the rising demand in 1940. In fact, wholesale prices of petroleum products are off 4 per cent, and the index of retail prices is at the lowest mark of which there is record except for 1933.

There have been notable gains in the amount of both crude oil and motor fuel in storage. However, considering the trend of demand, the increase in stocks is not of sufficient proportions alone to cause price weakness. The paradox that price weakness has nevertheless made much of the year's business unprofitable has to be explained, if it can be explained at all, by the extraordinary mania for volume at any cost which besets some of the marketing organization in the industry.

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Important Developments Noted In Transportation Facilities

By ROBERT H. COLLEY
President, Atlantic Refining Co.

THE refining industry furnished nearly 6 per cent more motor fuel in 1940 than in 1939, and is expecting to be called on for nearly 10 per cent more motor fuel in 1941 than it was this year. It also met a demand for kerosene and home heating oils in 1940 which was 15 per cent greater than the demand for 1939, and met it in a manner which should permanently dispose of any fear of shortage such as that which arose in the winter of 1939.

In transportation, the perfection of all-welded ships pioneered by Atlantic Refining Co. has speeded the construction of more economical merchant vessels at a great saving in labor and material. Most of the modern high-speed tankers which the industry built in cooperation with the U. S. Navy have already been turned over to the Government, thus materially increasing the Navy's striking power.

Because of the transfer of these ships, there is a temporary drawback in the oil industry's ability to serve the public quite as cheaply as had been planned. To meet this situation, and the expected growth in demand for petroleum products, the industry has undertaken the construction of 64 additional tankers, as of December 1. It has reestablished pipe-line connections from the Mid-Continent area to the Atlantic seaboard, from Illinois to New York, and from Philadelphia to Canada. It has surveyed routes for additional lines, and in cooperation with the railroads has worked out new low rates for rail movement of petroleum and products.

In technical progress the year 1940 brought development principally along two lines:

Ideas long germinating began to bear fruit. Petroleum became an accepted basis for synthetic chemistry in plants which in 1941 will synthesize

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rubber, toluene and glycerin, both of which are basic ingredients for military explosives, ammonia, alcohol, and a series of solvents for the plastics and synthetic textile industries. New processes for the production of blending materials, not practicable as recently as 1937, were installed in sufficient quantity to supply all needs of United States military and commercial aviation for 100-octane gasoline during 1941, to permit the accumulation of adequate reserves of this quality product and to contribute importantly to the improvement of domestic motor fuel quality at no increased cost to the public. Plants now planned or under construction will carry this development forward during 1941.

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Industry Rallies Forces to Aid Defense Program

By AXTELL J. BYLES
President, American Petroleum Institute

ABILITY of the petroleum industry to take its place in the national-defense program with fewer readjustments than any other basic industry was indicated again by the 1940 production and consumption of petroleum products. Although these demands exceeded by a substantial margin all previous records in the history of the industry, they easily were filled without straining of capacity.

Not only is the petroleum industry ready, with minor changes, to fill all normal and anticipated increased needs for its own vitally important products, government surveys of its capacities have revealed, but in 1940 it began the commercial production from petroleum of synthetic substitutes for other essential substances, chief among them toluene, rubber, and glycerine. The United States alone, among the nations of the world, can produce the quantities and qualities of super-aviation fuel needed for maximum military effectiveness.

Virtually every production, manufacturing, and consumption record of the industry was broken in 1940, the year-end analysis reveals. More oil was produced, more refined products were manufactured, and the United States consumed more petroleum products, than ever before in the 80-year history of the industry. United States consumption averaged almost 1,800 gal. per family.

Underground oil-reserve inventories at the beginning of the year were higher than at any previous time, reflecting oil discoveries that during the last 5 years have been more than twice as great as production. The price of the industry's chief product, motor fuel, declined to the lowest point, except for 1933, since 1919, although the highest average gasoline taxes ever levied kept at a high level the cost of motor fuel to the consumer.

During 1940 the industry began to feel the full effects of the war. Exports, contrary to the expectations of some, declined materially from 1939. Loss of Central European markets, strict rationing of petroleum products throughout most of the world outside the Western Hemisphere, availability of substantial Asian and South American supplies to Great Britain and her allies, governmental embargoes of some products, and the use of exchange credits for products not available elsewhere undoubtedly account for the large declines. Motor-fuel exports particularly were affected and dropped more than 40 per cent from 1939, because of decreased foreign purchases and, to some extent, the embargoes and export licensing of our own Government. Crude-oil shipments abroad declined 24 per cent, and refined products as a whole, 32 per cent.

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Removal of Retarding Elements Should Improve Profits

By FRANK PHILLIPS
Chairman of the Board, Phillips Petroleum Co.

PROFITS in the oil industry for 1940 will about equal, or moderately exceed, those of 1939. But conditions in the industry are now better than a year ago, indicating an increase in profits in 1941.

It is significant that profits were maintained at the 1939 level in spite of lower gasoline prices and a 30 per cent decrease in exports.

Fortunately many of the retarding conditions that existed during the past year have been remedied. During the last 6 months of 1940, oil production in Illinois decreased from a peak of 518,000 bbl. a day to 325,000 bbl. a day and further reduction is expected.

Shortages in inventories of burner oils have been largely overcome. These stocks are now 22 per cent larger than a year ago and are ample to meet increasing demand without requiring excessive refining that would cause an unneeded increase in gasoline stocks.

Today the industry has a better understanding of export conditions than it had a year ago. Foreign sales have been reduced to where they now represent only 9 per cent of our total demand, and most observers are anticipating some further decline. It now appears certain that demand during the coming year will reach another record high, with sufficient increase to more than absorb any further loss in exports.

With the principal causes of overproduction in 1940 largely removed, and with prospects for increasing volume, the industry is in a much better position to balance supply with demand during the coming year. Few other industries vital to national defense are better situated to serve the nation's requirements. There is no bottleneck in the production or transportation of essential petroleum products.

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Oil Industry Can Be Proud of Record

By ROBERT S. KERR
President, Kansas-Oklahoma Division, Mid-Continent Oil and Gas Association

AS the custodian of a vast amount of the invested capital of the American people, as an employer of well over 1,000,000 workers, as a paymaster whose payrolls approximate $1,500,000,000 annually, and as a taxpayer whose 1940 operations will produce over $1,350,000,000 in taxes, the petroleum industry cannot but be universally recognized as a contributor of great consequence to the economic welfare of the citizens of the United States.

The petroleum industry is proud of these great contributions to the development and preservation of this nation. It is fitting at this time, however, for the industry itself to take cognizance of the obstacles and troubles which have been surmounted in accomplishing these things which make the present-day petroleum industry in the United States the largest and most capable in the world.

Oil producers, oil refiners, and oil marketers, as well as suppliers of oil equipment and services, have customarily joined hands in a unified endeavor to overcome their troubles, to the end that the petroleum industry, those allied with it, and those great areas of population economically dependent upon it, might continue to survive and prosper. The many obstacles which have been overcome are well known to all, and still many, just as important, yet remain. During the coming year the need for cooperation and united action on the part of all engaged in the petroleum industry will be great. We must, therefore, in 1941, continue our policy of internal cooperation and solidarity, and maintain our ability to meet every demand of an expanding national defense.

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Subpena Witnesses for Trial Of Oil Companies in Price-Fixing Case

MADISON, Wis., Dec. 31.—H. C. Hale, clerk of federal court, was authorized today by Thurman Arnold, assistant attorney general, to subpena 27 government witnesses for trial of two oil companies and four executives scheduled here January 20 on charges of unlawful combination to restrict gasoline jobbers' margins. Names were not revealed pending issuance of subpenas, but most of the witnesses listed testified here in the price-fixing trial of 1937, Mr. Hale said. Defendants awaiting trial include the Texas Co., Tide Water Associated Oil Co., W. S. S. Rodgers, H. W. Dodge, S. B. Wright and Edward L. Shea.

ANNUAL INDEX

The Oil and Gas Journal is proud to present in this issue an index of its contributions to the science of petroleum for the year 1940. Articles presented through its pages by leaders in the industry, scientists interested in the fundamentals of all phases of science related to oil, special contributors on economic and political problems of the industry, and staff writers combine to present a picture of oil in 1940.

In addition to presenting a record of what has appeared in the pages of The Oil and Gas Journal during the past year, this index also implies a promise that during the year to come it shall be our constant effort and pleasure to present to our readers all the news of this ever-changing industry and all the material necessary to a full understanding of developments in what has become the most vital resource of present-day life. Index starts on Page 89.

International

U. S. S. R. . .

Development of Gas Reserves Planned by Soviet Industry

NATURAL gas, as one of the resources of the U.S.S.R., has not been considered and developed as it merits, states a recent issue of Moscow Industriya. Because of its high calorific value as a fuel and the properties which make it useful for other purposes, it can and should be the basis for a new industry, say Soviet authorities. Reserves of gas are known to be enormous, though no official estimate of their extent has ever been made, the article declares, and also points out that some geologists calculate these reserves at from 700 to 900 billion cubic meters, or "almost as much as in the United States."

Reserves, ready for commercial exploitation, are only 50,000,000,000 cu. m., located mainly in the oil fields. Prospecting of the districts where gas only is found is still more backward; reserves are estimated at 375,000,000,000 cu. m., but only 17,500,000,000 cu. m. have been actually located, though this is sufficient to form the basis for a recovery industry.

Gas recovered in the oil fields in 1939 ran up to 2,900,000,000 cu. m., which was used partly in the fields as fuel but was also piped to electric stations, towns, and villages, and used as raw material for new enterprises; but even in the three fields where it is systematically recovered, Baku, Grozny, and Maikop, it is used wastefully, and large quantities escape. In other fields the quantity utilized is insignificant; in the five areas concerned, only 300,000,000 cu. m. a year are used.

Potentialities Studied

This year the People's Commissariat for the petroleum industry, Narkomneft, has devoted much attention to the problem of natural-gas recovery. Prospecting for reserves is at present carried on by the commissariat, by the Committee on Geological Affairs under the Council of Commissars of the U.S.S.R., and by the individual oil trusts. These organizations work without any common plan, scattering their efforts, and often spend years in mapping their areas and getting ready to drill for gas, in order that an estimate of reserves may be made. It is therefore proposed to unify and coordinate the work of all these parties, with the object first of recovering the gas already located and, second, discovering new gas-bearing areas that can be prepared now for exploitation after 1942.

The plan of exploration and operation that is finally adopted is to be obligatory for all agencies involved. Work, it is held, should commence in industrial districts now deficient in local fuel resources, particularly in the central districts of European U.S.S.R., such as the Saratov oblast, where a ready market will consume all the production developed, or Stalingrad.

A recent regulation issued by the Narkomneft forbids the drilling of wells until after all steps for utilizing the gas have been taken; gas should be as carefully conserved as petroleum, both in storage and transport. It is obviously wise to build gasoline and carbon-black plants utilizing natural gas near to the wells, and the units put up should generally be small; large units sometimes take years to build, and in the meantime the wells are nearly exhausted. The Soviets plan to erect, henceforth, small portable units that can be moved when necessary.

The first gas areas to be ready for exploitation will be those in Dagestan, Western Ukraine, Ishma in the Komi Republic, and a gas and oil field in the Buguruslan district in the Chkalov (Orenburg) oblast. In Dagestan several plants are already using gas for fuel, and test drills have located gas-bearing areas in three other sections. The town of Makhach-Kala will be supplied with gas from Izberg this year, by two pipe lines that combine into one to deliver 200,000,000 cu. m. per year. It is hoped to discover gas in quantities sufficient to serve towns outside of Dagestan proper.

The gas wells in Western Ukraine are at present delivering 200,000,000 cu. m. a year, and this quantity will soon be increased to 300,000,000 cu. m.; new pipe lines will convey this gas to Lvov, Drogobych, and Borislav. There are three other areas that are now yielding gas, and several more that are promising. The estimated geological reserves of the first three areas are said to reach 33,000,000,000 cu. m., enough to be piped over long distances—say to Kiev. If Kiev could be supplied with gas, it would save expense and the hauling of fuel from a distance.

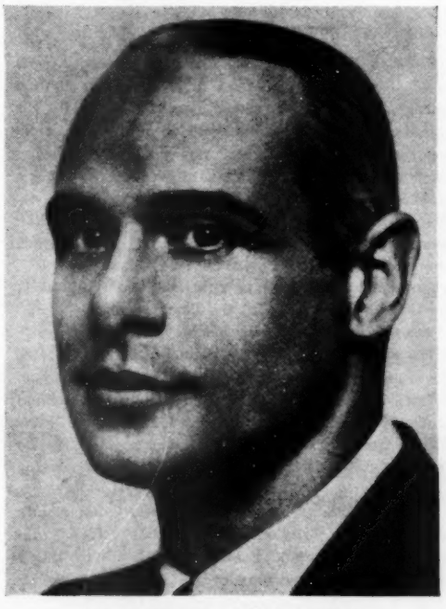
Transmission First Problem

The gas wells in the Izhma section are believed to be very rich, some wells yielding as high as 1,000 tons a day (in petroleum equivalents). It is proposed to run a pipe line from this field to Solikamsk, Berezniki, and Molotov, where gas will replace in the factories wood and coal now hauled from a distance, and will be used for domestic purposes in the cities and for fuel in the autotrucks operating there.

To utilize economically the supplies of natural gas that will be made available, a network of gas pipe lines must be built; but the type of line pipe needed is not yet manufactured in the U.S.S.R. Yet this type of piping is economical of metal, and it would pay for the metallurgical plants to learn to produce it, says the paper.

Noteworthy is the fact that the development of natural-gas wells is much cheaper than that of oil wells, running from one-quarter to one-ninth of the cost of the latter; a ton of oil in gas equivalents costs only 23 to 27 rubles, and is the cheapest form of fuel in places where this gas is available. Little capital investment is therefore required to build up a natural-gas industry, and even this investment would be returned in a few years. Soviet commentators insist that it will pay the Petroleum Commissariat and other government agencies involved to give immediate attention to developing this new industry.

ARGENTINA OIL CHIEF . . .



DR. DANIEL AMADEO Y VIDELA

Continuation of Argentina's national petroleum policy along lines prevailing in the recent past has been pledged by Dr. Daniel Amadeo y Videla, the new minister of agriculture, the cabinet post responsible for operations of Yacimientos Petroliferos Fiscales.

Dr. Amadeo y Videla succeeded Dr. Cosme Massini Escurra in the recent reorganization of the national cabinet.

The new minister of agriculture will be 42 in May. He studied in the school of law and social sciences in the University of Buenos Aires, in which he received his degree in 1919. He represented the Province of Buenos Aires in the Chamber of Deputies from 1936 to 1940. Other public offices previously occupied by the new minister include: president of the National Advisory Commission of Agricultural Education, and membership in the County Society of Colonel Suarez and fifth International Congress of Agricultural Education

Mexico . .

Plans Complete for Reducing Mexican Oil-Industry Personnel

A REDUCTION of 25 to 35 per cent in the personnel of Petroleos Mexicanos, Mexican Government petroleum agency, awaits only a final check of reports prepared by committees. Reports from Mexico City indicate that 4,000 to 6,000 workers out of a total of 18,000 will be dismissed in the near future and that discontinuance of other benefits will bring the operating expenses within the limits advocated by ex-President Cardenas.

Meanwhile, reports came from Mexico City that arrangements were being made to supply Australia with Mexican crude and products. Details were not released surrounding the Australian negotiations but there was speculation that the British island in the Pacific was arranging for replacement of supplies previously drawn from the Netherlands East Indies. Commitments for increased petroleum deliveries to Japan are likely to force readjustment of demand previously supplied from the Netherlands East Indies.

Petroleos Mexicanos is reported to have accumulated an operating deficit of 68,000,000 pesos since the oil properties were expropriated in March 1938. Liquidation of the deficit and conversion of operations to a profitable basis are the incentives behind the retrenchment plan. Provision must be made in the nationalized petroleum industry's economy to indemnify expropriated companies.

Oil Men to Learn Industry's Place in Defense Program

MORE than 1,500 oil-industry leaders are expected to learn in brief form "The Place of the Petroleum Industry in Our National-Defense Program" as these men gather together at dinner January 11 in the Tulsa Coliseum. The occasion is the annual membership dinner of the Mid-Continent Oil and Gas Association but the program has been designed to interest men in all divisions of the industry.

Originally scheduled as the customary annual membership dinner of the Kansas-Oklahoma division, it was decided to hold it in Tulsa's mammoth Coliseum, according to Robert S. Kerr, president of the association, so that a maximum number of oil men could attend. "Because of world conditions, it will be one of the most important national-defense meetings yet held in the Southwest," he remarks.

Henry R. Luce, president of Time, Inc., New York, will be the principal speaker. As editor of "Time," "Life," and "Fortune" magazines, Mr. Luce, one of the best posted men on trends in Europe and the Orient, will address the meeting on the world crisis and its effects upon America.

Equally important will be the "Information Please" type of panel discussion participated in by national authorities on the petroleum industry, who will discuss the oil industry's preparedness to adequately handle the production, transportation, refining and distribution of petroleum products to meet both domestic and national-defense needs.

Participating in this panel will be George A. Hill, vice president for production, American Petroleum Institute, and president of the Houston Oil Co. of Texas; Dr. Gustav Egloff, director of research, Universal Oil Products Co., Chicago, Ill.; Gen. Baird H. Markham, director, American Petroleum Industries Committee, New York, and Chester H. Gray, director, National Highway Users Conference, Washington, D. C. The panel discussion will be led by William P. Steven, managing editor of the Tulsa Tribune.

The arrangements committee, under the direction of Ralph O. Dietler, chairman, and J. F. McManmon, vice chairman, is making tickets available to the oil industry generally and to the public on Monday, January 6. In view of the program, it has been decided that the ladies will be invited to attend. The dinner will be strictly informal and the ticket cost will be $2.50 per person. Dinner will be served at 6:30.

Geologists Hold 3-Day Meeting in Austin; Select Boston for 1941

The Geological Society of America met in Austin, Tex., last week for a 3-day session, and selected Boston, Mass., as its 1941 convention city. Massachusetts Institute of Technology and Harvard University will be host schools for the meeting.

In the election of officers, Dr. C. P. Berkey, of Columbia University, was named president, to succeed Dr. Eliot Blackwelder, of Stanford University. Other new officers are: George S. Hume, Geological Survey of Canada, vice president; Douglas Johnson, Columbia University, vice president; Raymond C. Moore, Kansas University, vice president; William F. Foshag, U. S. National Museum, vice president; H. R. Aldrich, New York City, secretary, and Edward B. Mathews, John Hopkins University, treasurer.

Councilors for 1941 were Dr. Blackwelder; Charles E. Weaver, University of Washington; E. L. DeGolyer, Dallas, Tex., and William W. Rubey, U.S.G.S., Washington, D. C.

Dr. Fred C. Wright, of Carnegie Institute geophysical laboratory, at Washington, D. C., was elected president of the Mineralogical Society of America, and L. W. Stephenson, U.S.G.S., was named president of the Paleontological Society at concurrent meetings.

Nelson Horatio Darton, of Washington, D. C., was proclaimed the nation's leading geologist for 1940 at the meeting, and was presented with the Penrose Medal of the society. Dr. Barton is generally credited with originating the science of large-scale contour mapping. He has contributed extensively to the literature and progress of American geology for more than 50 years.

Commerce Commission Starts Probe of Pipe-Line Rates

WASHINGTON, D. C., Dec. 31.—The Interstate Commerce Commission today ordered 21 oil-pipe-line companies to show cause by February 23 why the commission should not order them to reduce their transportation charges by percentages varying from 3 to 55 per cent in order to bring their earnings down to 8 per cent on valuation. Fourteen other pipe lines were found to be earning less than 8 per cent.

The order was in Docket 26570, an investigation of pipe-line rates started by the Interstate Commerce Commission in 1934 as a result of complaint by Harold L. Ickes as N.R.A. oil-code administrator.

DEATHS

EUGENE B. MARLOW, 45, Tulsa oil executive, was killed December 27 when his automobile figured in a collision with another vehicle near Sullivan, Mo. His wife was killed in the same accident, and his 9-year-old son seriously injured. The Marlow family was returning from a Christmas vacation in Sullivan, Ind., home of Mrs. Marlow's mother. Mr. Marlow was vice president of the Sinclair Prairie Oil Marketing Co. He had been with the Sinclair company since 1920, in which year he became a scout in the Tulsa district. In 1921, when Standard of Indiana purchased half interest in the Sinclair Pipe Line Co., the Sinclair Crude Oil Purchasing Co. was organized and Mr. Marlow was transferred to the new company, assuming duties in Texas. He returned to Tulsa 2 years later as vice president. He later served in the same capacity with the Stanolind Crude Oil Purchasing Co., and in 1931 resigned to return to the Sinclair Crude Oil Purchasing Co. as vice president.

C. W. MOORE, oil man of Conroe, Tex., was instantly killed December 24 when his automobile collided with a truck near Conroe. Mr. Moore had lived in Conroe for 8 years, since discovery of the Conroe oil field.

FORREST BURGESS DUNLAP, 50, of Tulsa, died of influenza December 23, following a week's illness. Mr. Dunlap, an engineer for the National Transit Co., had lived in Tulsa 24 years. He was born in Mercer, Pa. Survivors are his widow, a son and a daughter.

R. W. DUNN, 57, president and general manager of the American Oil Co., Pure Oil Co. subsidiary, died at a hospital in Hattiesburg, Miss., December 17, following a month's illness from heart trouble.

J. A. OWENS, 65, field superintendent at Seminole, Okla., for Cities Service Oil Co., died December 23. He had been beaten to death as he sat in his car, which was parked near a supply house.

H. E. WEST, pioneer in Wyoming oil development, died recently in Independence, Kans. He was associated with the late James B. Hazlett in the contracting business and producing firm of West and Hazlett. Mr. West was born in Indiana in 1865. He early moved to Kansas, where he entered the oil business, later becoming the first president of the Independent Petroleum Association of America.

GODFREY M. BRIGHAM, 43, vice president, North American Car Corp., Tulsa, died December 30 at a St. Louis, Mo., hospital. He had been in ill health for 5 years and confined to the hospital for 18 months.

CHARLES A. CONLEY, 57, drilling contractor of Ranger, Tex., died at his home in Ranger, December 26. He was ill only a few hours before his death. Burial was in Sapulpa, Okla.

THOMAS OLIVER TURNER, retired geologist of Fort Worth, Tex., died last week at his home in Fort Worth. Mr. Turner was a native of Canada and was 80 years old at the time of his death.

RAOUL C. LECLERC, 51, vice president of the Independent Petroleum Co., died December 26 at Montreal, Canada.

THOMAS P. FLANAGAN, 75, retired employe in the land department of Gulf Oil Co., Tulsa, died at his home following a lingering illness. Mr. Flanagan, who had lived in Tulsa for the past 31 years, was retired after a service of 20 years. Seven sons and three daughters survive.

VERNON EUGENE DUNHAM, 74, retired South Penn Oil Co. employe, died at his home in Bradford, Pa., December 20. He had been in ill health for 3 years. He was born at Enterprise, Pa., and went to Bradford over 50 years ago.

BERNARD T. HUNGIVILLE, prominent Bradford, Pa., oil producer, died at his home December 22, following a long siege of ill health beginning when he suffered a stroke in 1936.

ARTHUR J. ALMY, 63, Richburg, N. Y., oil operator, died at his home there December 18. He was a member of the firm of Almy, Pierce & Hammong. His widow survives.

THE MARKETS*

CRUDE OIL: Conditions in the crude-oil market appear to be firming. Imposition of an extra shutdown day in Texas aided the situation there. Heavier types of crude are receiving an especially strong play in consideration given 1941 requirements. Refiners have given much attention to the forecasts that residual requirements will increase at a more rapid rate than other products accounting for the attraction surrounding heavier crudes.

REFINERY: Softness in the distillate fuel-oil market on the Gulf Coast appears to be spreading. Demand from the Atlantic Coast lacked some of the vigor apparent earlier in the winter largely because of mild weather conditions prevailing in that part of the consuming territory. Another factor in the slack Gulf market is the high boat rates and reduction of inventories for the year-end appraisal.

TANK-WAGON AND POSTED DEALER: A general reduction ranging from 0.1 to 0.3 cent per gallon was announced December 31 by Socony-Vacuum Oil Co., Inc. The reduction applies to most marketing points in New York and the New England States. Tank-wagon fuel-oil prices have been increased at several points along the Atlantic Coast, particularly in Maryland and the Carolinas.

FINANCIAL: Oil securities staged a moderate recovery at the end of last week. Average of 30 representative stocks for the week ended December 28: High, 23.49; low, 22.58; close, 23.14. Week ended December 21: High, 23.57; low, 22.59; close, 22.94.

*Detailed information in market section.

Natural Gas News

Revenues of Natural-Gas Companies Increase 9.4 Per Cent in 1940

NEW YORK.—The gas utilities of the United States continued their record of progress and expansion during 1940, according to Alexander Forward, managing director of the American Gas Association.

Manufactured and natural-gas companies, supplying towns and cities with a population of more than 84,000,000, served a total of 17,980,300 customers, representing the largest number of consumers ever connected to the mains of the industry. This was an increase of 481,000 over 1939. Of these, 10,232,900 were served by the manufactured-gas industry and the remaining 7,747,400 were served by the natural-gas industry. Revenues of the entire industry, both manufactured and natural, aggregated $873,358,000, a gain of 7.3 per cent over the preceding year of 1939. The natural-gas companies grossed $491,276,000, a gain of 9.4 per cent for the year, while revenues of the manufactured-gas companies were $382,082,000, as compared with $365,150,000 in 1939, an increase of 4.6 per cent.

Sales of natural gas for domestic uses registered a pronounced upturn, rising from 372,971,000,000 cu. ft. in 1939 to 419,354,000,000 cu. ft. in 1940, a gain of 12.4 per cent. Sales of natural gas for industrial purposes rose from 654,662,000,000 cu. ft. in 1939 to 719,776,000,000 cu. ft. in 1940, an increase of 9.9 per cent. Preliminary estimates indicate that the total production of natural gas in 1940, including amounts used in the manufacture of carbon black and for field purposes, reached a total of 2,600,000,000,000 cu. ft. Approximately 183,000,000,000 cu. ft. of natural gas were used as fuel for generating electric power in 1940.

Gas companies continued to inaugurate more favorable rates for house-heating through central-plant burners and equipment. It is estimated that the total number of gas central house-heating installations connected to the lines of all United States gas companies in 1940 amounted to 800,000. In addition there were approximately 1,800,000 dwellings heated by unit heaters, space heaters, floor furnaces, etc., giving a total of more than 2,600,000 homes in the United States that are heated by gas.

Pennsylvania Commission Approves Gas and Pipe Line Purchases

OIL CITY, Pa.—The Pennsylvania Public Utility Commission at Harrisburg last week gave its approval to a $165,686 deal for the purchase of pipe lines and gas lands in northern Pennsylvania and New York.

It approved two agreements between North Penn Gas Co. and New Penn Development Corp. under which North Penn would buy from New Penn approximately 24,900 ft. of pipe line and two compressor stations in Potter and Tioga counties for $63,323; and Allegany Gas Co. would buy from New Penn 50,100 ft. of pipe line, gas lands, lease holds, and other facilities in Tioga, Potter and McKean counties, Pennsylvania, and in Allegany, Steuben, and Chemung counties in New York, for $102,363. The concerns are affiliates and the commission said the transactions would enable them to render more efficient service.

Deadline Nearing in A.G.A. Annual "Wrinkle" Contest

NEW YORK.—One of the most interesting projects sponsored by the Natural Gas section of the American Gas Association is the annual "Wrinkle" Contest which has for its primary object better and more efficient ways of accomplishing problems which arise in the industry. Natural-gas companies are reminded that this contest runs from May to May and that entries are now being submitted to V. A. Ogilvie, chairman of the committee, Gas Advisers, Inc., 70 Pine St., New York. All entries must be in Mr. Ogilvie's hands by April 1, 1941, in order to be eligible for the 1940-41 contest. As in previous years, wrinkles will be judged under the four classifications of production, transmission, distribution, and safety.

Michigan 10-Month Gas Output Sets New Record High

LANSING, Mich.—Greater use of casinghead gas for gasoline production and more sales of dry gas, are believed to account for the all-time high in Michigan natural-gas production reached in the first 10 months of 1940. Production at 11,025,768 M.c.f. in the first 10 months of this year, reported by F. R. Frye of the Conservation Department's Geology Division, exceeds the previous high of 10,137,003 M.c.f. in 1939. For all of 1940 it may approach 14,000,000 M.c.f., Mr. Frye said.

Refinery News

Record California Gasoline Tax Indicated for 1940

SACRAMENTO, Calif.—Assurance that income from California's gasoline tax would establish an all-time record during 1940 has been given by Richard E. Collins, chairman of the state Board of Equalization. In a report covering motor-vehicle fuel distribution for the month of November, Collins pointed out that the tax on a gallonage of 159,978,119 amounted to $4,799,343 for the month. This represented a gain of 3.7 per cent over the same month of the previous year.

Board records show that with the November total the gasoline tax already amounts to $51,991,178 for the year. The previous high yearly total of $54,323,050, established in 1939, will be surpassed by a substantial margin when the December 1940 figures are included. The November total was slightly under the October income which amounted to $4,978,381. It was the twentieth consecutive month that gains had been shown over comparable periods of previous years.

News of Pipe-Line Activity, which was formerly found on this page, will be found on Pages 52-53.

Valvoline Oil Co. Celebrates 75th Anniversary

CINCINNATI, Ohio.—The year 1941 marks the completion of 75 years of uninterrupted existence for the Valvoline Oil Co., maker of the first Pennsylvania lubricants, it is announced by G. P. Doll, president. But the Valvoline organization wants it distinctly understood, he declared, that while the company has reached a ripe old age it is just as young in spirit and just as aggressive as in its early pioneer days.

The parent organization was launched in 1866, Mr. Doll explained, by Dr. John Ellis, a Michigan homeopathic physician, who became interested in Pennsylvania petroleum products during the Civil War. Dr. Ellis organized the Continuous Oil Refining Co. which later changed its name to Leonard & Ellis and then to Valvoline Oil Co. to distill and market what was then known as "rock oil." At that time steam cylinder lubrication was accomplished by means of tallow, suet, lard or compounds of vegetable or animal origin.

Expansion of Aviation-Gasoline Refining Facilities Urged

NEW YORK.—Expansion of refining equipment for producing 100-octane aviation-grade gasoline to assure ample supplies for defense and other emergency needs was urged by William S. Farish, president of Standard Oil Co. (New Jersey) this week. His suggestion, mailed to 15 large refining companies, was that $30,000,000 be expended for this purpose although the industry already is capable of meeting 1941 requirements. Part of this processing equipment is shut down, he said, so that purchase and storage of more of this fuel during the next 6 months would assist in meeting future demand by keeping present equipment operating at the maximum.

By March 1941 he estimated the industry's producing capacity would be 35,000 bbl. daily, whereas civilian demand plus exports of 100-octane gasoline in 1941 are estimated at 10,000 to 12,000 bbl. daily. He warned, however, "training planes might require more fuel than expected and also commercial needs might grow apace with those of defense."

Natural Gasoline

Hearing on Proposed Louisiana Plant Scheduled for January 9

HOUSTON, Tex.—A hearing on the application of Stanolind Oil & Gas Co.'s $500,000 recycling plant to be constructed in the South Jennings field, Jefferson Davis Parish, will be held before the Louisiana Conservation Department at New Orleans, La., January 9. Construction of the plant has been under consideration for several months and actual construction is expected to get under way in the near future.

Condensate Recovery of Eastern Texas Plants Gains in November

DALLAS, Tex.—Production of condensate plants in eastern Texas continues to increase, the November report of the Oil and Gas Division of the Texas Railroad Commission reveals. The number of condensate-recovery plants in operation in the area remained at 11, plus two repressuring plants, the same as in October 1940. In November, however, the 13 plants were connected to 76 producing wells and recovered an average of 447,807 gal. of condensate daily, as compared with 74 intake wells and a recovery of 422,083 gal. daily in the previous month. In November the plants processed 437,188 M.c.f. daily, for an average recovery of 1.024 gal. per 1,000 cu. ft. as compared with a recovery of 1.013 gal. per 1,000 cu. ft. in October. The residue gas was returned to 27 injection wells in each month.

Canadian Aviation Gasoline Being Made From Turner Valley Crude

CALGARY, Alta.—The first aviation gasoline processed from Turner Valley crude will be placed on the market early in 1941 by British American Oil Co. which has installed the necessary equipment in its East Calgary refinery. Aviation gasoline was previously produced in western Canada at Ioco, British Columbia, and Fort Norman, Northwest Territories. Production will be taken largely by R.C.A.F. flying schools in the prairie provinces.

PROGRAMS AND MEETINGS

EXECUTIVE BOARD NATIONAL OIL SCOUTS ASSOCIATION MEETS

At a meeting in December the executive board of the National Oil Scouts and Land Men's Association met in Dallas and discussed affairs of the association, along with the membership campaign for 1941, annual publication of the yearbook, and amendments to the constitution and bylaws. Its annual convention is scheduled to be held in Dallas on May 29-31, 1941. Members of the executive board, officers and directors of the various district associations shown at the meeting (starting at the nearest man and reading clockwise) are: Jim Noel, Atlantic Refining Co., Houston; H. J. Roberts, Gulf Oil Corp., Houston; R. W. Pitcher, Tide Water Associated Oil Co., Tyler; Ed C. Harmon, Seaboard Oil Co., Dallas; Mont. G. Calvert, Humble Oil & Refining Co., San Antonio; M. A. Ricketts, Sinclair Prairie Oil Co., Corpus Christi; W. E. Brown, Shell Oil Co., Inc., Houston; E. J. Raisch, general secretary, Austin; C. J. Bradley, Texas Co., Tyler, president of the national association; H. L. Eversberg, Shell Oil Co., Inc., Baton Rouge, La., first vice president of the national association; C. P. Chisholm, Pure Oil Co., Houston, chairman of board of directors and past president of the national association; R. H. Weaver, Sun Oil Co., Jackson, Miss., second vice president of the national association; R. L. Denton, Magnolia Pipe Line Co., Kilgore, secretary-treasurer of the national association; Wesley Weed, Sun Oil Co., Alice; Raymond T. Nelson, Superior Oil Co. of California, Corpus Christi; W. L. Allen, Gulf Oil Corp., Marshall; S. C. McKinney, Shell Oil Co., Inc., Tyler. Also in attendance and not in picture was M. C. Hoover of Shell Oil Co., Inc., El Dorado, Ark., last year's chairman of the convention committee.

S.A.E. to Hold Annual Meeting In Detroit Next Week

The annual meeting of the Society of Automotive Engineers will be held in the Book Cadillac Hotel, Detroit, Mich., January 6-10. The meeting will feature 21 technical sessions, the annual dinner, a display of military equipment of the air, ordnance, and quartermaster types, and the S.A.E. engineering display. Of interest particularly to oil men are the sessions on fuels and lubricants and diesel engines. Tentatively scheduled on the former session are the following papers:

"A 13-Year Improvement in Mixture Ratios," by W. G. Lovell, J. M. Campbell, B. A. D'Alleva, and P. K. Winter, of General Motors Research.

"The 1940 C.F.R. Road Tests," by J. M. Campbell, General Motors Research.

"Engine Design Versus Engine Lubrication," by R. J. S. Pigott, Gulf Research & Development Co.

"Lubrication of Severe-Duty Diesel Engines," by J. G. McNab, W. C. Winning, B. G. Baldwin, and F. L. Miller, Standard Oil Development Co.

National Oil Burner Progress Exhibition And Convention Scheduled for March

Plans for convention features for the National Oil Burner Progress Exhibition and convention to be held under the auspices of the Oil Burner Institute in Philadelphia, March 17-22, were gone over by the executive committee of the institute at a meeting last month, and it is expected that an announcement will be made shortly of speakers to be heard.

CALENDAR OF EVENTS

January

SOCIETY OF AUTOMOTIVE ENGINEERS, annual meeting and engineering display, Book-Cadillac Hotel, Detroit, Mich., January 6-10.

LOUISIANA ENGINEERING SOCIETY, annual meeting, St. Charles Hotel, New Orleans, La., January 10-11.

MID-CONTINENT OIL AND GAS ASSOCIATION, Kansas-Oklahoma division, annual membership dinner, Coliseum, Tulsa, January 11.

LIQUEFIED PETROLEUM GAS ASSOCIATION eastern section, regional meeting, New York, January 16-17.

COMPRESSED GAS MANUFACTURED GAS ASSOCIATION, INC., annual meeting, New Nork, January 20-21.

NORTHWEST PETROLEUM ASSOCIATION, Radisson Hotel, Minneapolis, Minn., January 23-24.

February

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Engineering Societies Building and Commodore Hotel, New York, N. Y., February 17-20.

NORTH TEXAS OIL AND GAS ASSOCIATION, Wichita Falls, Tex., February 22.

LIQUEFIED PETROLEUM GAS ASSOCIATION, INC., annual convention, Chicago, February 24-25.

AMERICAN PETROLEUM INSTITUTE, southwestern district regular spring meeting, Washington-Youree Hotel, Shreveport, La., February 27-28.

March

AMERICAN SOCIETY FOR TESTING MATERIALS, Hotel Mayflower, Washington, D. C., March 3-7.

AMERICAN PETROLEUM INSTITUTE, Pacific Coast District, Division of Production, regular spring meeting, Biltmore Hotel, Los Angeles, Calif., March 11.

OKLAHOMA UTILITIES ASSOCIATION, annual meeting, Tulsa, March 17-18.

MID-CONTINENT CHAPTER, AMERICAN PETROLEUM INSTITUTE, spring convention, Amarillo, Tex., March 21-22.

April

AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, twenty-sixth annual meeting, Rice Hotel, Houston, Tex., April 2, 3, and 4.

AMERICAN CHEMICAL SOCIETY, St. Louis, Mo., April 7-11.

MIDWEST POWER CONFERENCE, fourth annual meeting, Palmer House, Chicago, April 9-10.

SOUTHWESTERN GAS MEASUREMENT SHORT COURSE, College of Engineering, Oklahoma University, Norman, Okla., April 15-17.

AMERICAN PETROLEUM INSTITUTE, eastern district, Division of Production, regular spring meeting, William Penn Hotel, Pittsburgh, Pa., April 17-18.

NATURAL GASOLINE ASSOCIATION OF AMERICA—Annual convention, Baker Hotel, Dallas, Tex., April 23-25.

PETROLEUM INDUSTRY ELECTRICAL ASSOCIATION, Mayo Hotel, Tulsa, April 23-25.

NATIONAL PETROLEUM ASSOCIATION, semi-annual meeting, Hotel Cleveland, Cleveland, Ohio, April 24-25.

PETROLEUM AND NATURAL GAS CONFERENCE, State College, Pa., April 25-26.

May

AMERICAN PETROLEUM INSTITUTE, eleventh midyear meeting, Mayo Hotel, Tulsa, May 19-23.

NATIONAL OIL SCOUTS AND LAND MEN'S ASSOCIATION, annual convention, Dallas, Tex., May 29-31.

June

AMERICAN SOCIETY FOR TESTING MATERIALS, forty-fourth annual meeting, Palmer House, Chicago, June 23-27.

September

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS, Petroleum Division, East Texas chapter, annual convention, Adolphus Hotel, Dallas, Tex., September 25-27.

October

AMERICAN GAS ASSOCIATION, twenty-third annual convention, Atlantic City, N. J., October 20-25.

November

AMERICAN PETROLEUM INSTITUTE, twenty-second annual meeting, San Francisco, Calif., November 3-7.

Rotary drive bushings are widely used to prevent the binding of the kelly as it passes through the rotary table. In some cases, the regular drive bushings will bind the kelly to the point where the bit is actually off bottom. The drive bushing shown is of the roller-bearing type; it stays on the kelly throughout the drilling of the hole. The roughneck with the bar is waiting for the driller to turn the rotary table to the proper position so he can pry the drive bushing to where it will drop into place

ENGINEERING & OPERATION

In This Section

JANUARY 2, 1941

EFFICIENT PLANT USED IN ILLINOIS FIELD FOR SALT-WATER DISPOSAL
By Harry F. Simons ..... Page 32

Production of salt water in Illinois fields, generally, has reached a point where its disposal is causing some concern. Since the Illinois basin is an agricultural country, erection of large disposal pits as a rule are not feasible. Subsurface disposal is hindered by low porosity and permeability of possible disposal zones. In the Noble field Pure Oil Co. is operating a closed-type plant that is successfully returning 6,000 bbl. daily to the Tar Springs formation.

TOLUENE-BENZENE PURIFICATION PLANT
By W. T. Ziegenhain ..... Page 34

A new plant for toluene-benzene purification, essentially including a chemical treating and fractionating unit which has a high degree of flexibility, is now in operation. For the time being this unit is recovering toluene and benzene from coal-tar distillates, but if the need should arise it could be placed in petroleum service to produce specialties of narrow distillation range.

PRACTICAL DRILLING-MUD TREATMENT AND CONTROL
By C. F. Bonnet and Nelson A. Howard, Jr. ..... Page 41

Savings in time and costs of drilling, as well as the insurance provided against blowouts, are often made possible by chemical treatment of the drilling mud to control its viscosity, weight, water loss and other properties. Here equipment for chemical treating, mud-conditioning practices and the way chemicals are used to meet field conditions are discussed.

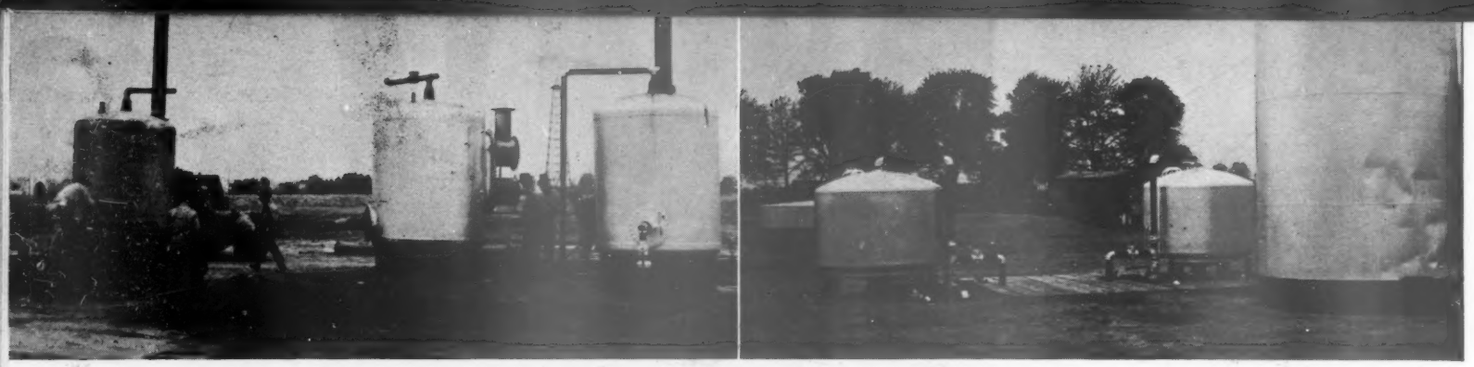
GRAVITY LOSSES IN PRODUCTION AND HANDLING OF CRUDE OIL
By Clarence Glasgow ..... Page 46

Need for reducing gravity losses of crude oil is generally recognized by the oil industry but many operators conduct their producing and storage operations along lines that cause them annually to take a heavy loss. As a loss of 1° A.P.I. results in a 2½ per cent loss in volume, it has been estimated that 32,000,000 bbl. of the most valuable part of the crude is lost every year.

SAFETY: Quick-Closing Valve Shuts Off Engine ..... Page 42

OPERATING IDEAS ..... Page 43

PROGRESS IN METALS—By W. L. Nelson ..... Page 50



Left: Installing a third heater for the separation of salt water from oil. Right: General view of salt-water disposal plant on the Taylor-Palmer lease of Pure Oil Co.

Efficient Plant Used in Illinois Field for Salt-Water Disposal

By HARRY F. SIMONS

WITH the exception of Devonian limestone, most of the oil horizons in Illinois produce relatively small quantities of salt water. Most of the Chester sands, particularly, have quite a low permeability which affects the rate of flow of both oil and water into the well bore. Even where high percentages of water are being handled, the total volume of water is not great as compared to other areas as the per-well production is not high. Production of water generally has reached the point where its disposal is causing some concern.

Disposal of water presents several problems. The Illinois basin is an agricultural country and the erection of large disposal pits and other means of surface disposal are, for the most part, out of the question. Subsurface disposal is the only safe means open to the oil operator.

However, subsurface disposal, an easy task in some sections of the country, is not a simple task in Illinois. One of greatest aids to easy disposal of salt water is an available formation having a high porosity and permeability which does not already have fluid in it. Illinois has no such formations available and disposal must be made in formations, having a low porosity and permeability.

The ability of the disposal well to take water determines the amount of care which must be taken in preparing the water for injection. Where a good disposal zone is available, large quantities can be injected with no difficulty and one of the largest disposal wells on record in the country has also the poorest treating system. If the disposal zone is poor, great care must be taken that the water is in proper condition or the pore spaces in the sand will become clogged and the well will have to be cleaned out or abandoned.

Producing Equipment

The plant used by the Pure Oil Co. for the disposal of approximately 6,000 bbl. daily of water produced along with the oil from the Cypress sand in the Noble field, Richland County, is of the closed type. The Noble field also produces from the McClosky lime but the oil production is accompanied by practically no water. The well used for disposal was originally drilled to the McClosky where only a very small quantity of oil was found and it was then plugged back to the Tar Springs sand and converted into a disposal well.

The disposal system consists mainly of the treating equipment at the leases, gathering lines and the disposal plant where the water is filtered before injection. The water will not enter the disposal sands by gravity and a pump pressure of 550 lb. per sq. in. is applied at the well head.

Equipment on each lease consists of a manifold and two separators, heaters, and settling tanks. All wells are flowed through a common separator except during test periods when the second separator is brought into use. Fluid produced goes from the separators to the heaters and then into the settling tanks. The water in the oil treats out easily with the application of heat and small amounts of chemical compounds.

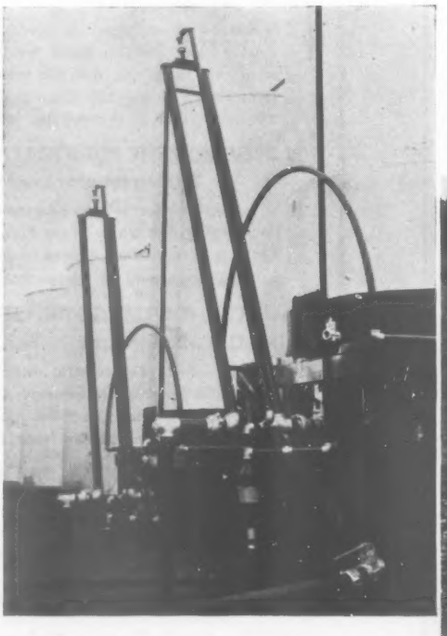
The settling tanks are air tight and a small amount of pressure, 2 to 4 oz. per sq. in., is maintained. The salt water is drawn from the bottom of the settling tank and flows by gravity to the disposal plant. To control level of the salt water in the tank and prevent entry of air, special fluid regulators are used. These consist of a U-turn, which is adjustable, and a siphon breaker. The U-turn is made from 2½-in. tubing with one side being supported by the tank connection and the other by the riser from the gathering system; a semicircle made from 2-in. pipe and bolted to the tank foundation supports the U-turn in any position. The siphon breaker consists of a 1-in. connection at the top of the turn which allows a small gas pressure to be applied. If the level in the tank rises above the top of the U-turn, some of the salt water will be forced into the gathering system but siphoning of the fluid out of the tank is prevented by the siphon breakers.

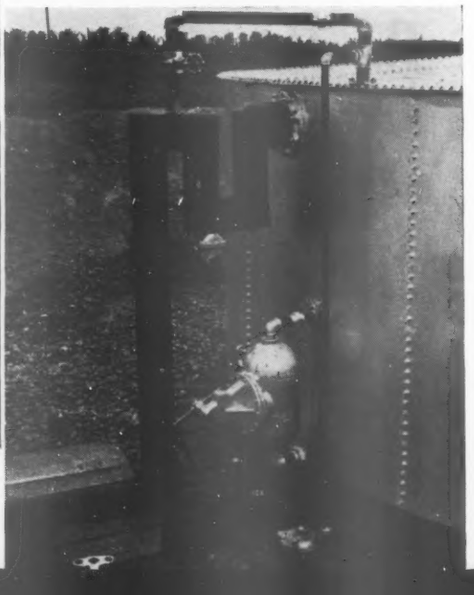
At each lease, overflow pits are provided for the storage of water whenever the disposal system is shut down. The line to the pits is also equipped with a siphon breaker. The pits are only used in case of emergency and the water is allowed to evaporate from them.

Gathering System

The gathering system consists of 7-in. steel pipe with appropriate-size laterals to the different leases. The plant is centrally located so one line enters the plant from the approximate north and the other from the south. Corrosion tests and examinations of these lines show that a few "hot spots" exist where the pipe is corroding on the outside but that there is no corrosion on the inside of the pipe.

The 7-in. lead lines from the field enter the bottom of a 500-bbl. bolted-steel tank which acts as a combination skimming and field surge tank. The tank is set in a pit with the top approximately level with the ground; this allows the salt water to flow





Left: 210-bbl. settling tanks with special U-turns for regulating level of salt water. A siphon breaker is installed at top of the U-turns. Below: Gooseneck and siphon breaker on overflow line, kidney valve for regulating flow to centrifugal pump and gas regulator for controlling gas pressure on tank

by gravity from lease tanks to the disposal plant.

From 2 to 4 oz. of gas pressure is kept on the tank to prevent any entry of air. Overflow from the skimming tank is through a 7-in. line located near the top of the tank; the overflow line has a gooseneck and a siphon breaker to prevent the entry of air and any small siphoning action. The siphon breaker again consists of a small gas line which has a regulated gas pressure on it.

Flow of the salt water from the tank is controlled by a kidney valve which automatically regulates the amount of water going to the centrifugal pump. The centrifugal pump forces the water through a low-pressure filter and surge tank into the suction of the high-pressure pump. The high-pressure pump discharges through a high-pressure filter and from there into the disposal well.

The centrifugal pump has a capacity of 7,000 bbl. daily at 25-lb. operating pressure. It has a 4-in. suction and the same size discharge. Pressure side of the centrifugal pump is connected to the two industrial-type filters which are 5 ft. high and 7 ft. in diameter. Each filter has a 6,000-bbl. capacity thus allowing for expansion of the plant with little difficulty, and at the same time permitting uninterrupted operation while one of the filters is being backwashed. Pressure differential across the filters is 15 lb. per sq. in., the balance of the pressure delivered by the centrifugal pump being necessary for the movement of the salt water on the downstream side of the filters.

The filtering element was built to specifications of Pure's engineering department. The filtering medium is supported by a steel plate which has 144 steel jets with each jet having eight circumferential holes. This design prevents channeling. Sand and gravel are used for filtering the water

Left: Piping is contained in a boarded trench. Suction and discharge lines from centrifugal pump, suction of duplex pump and backwash lines are also shown. Right: Liquid-level controller and gas regulator on surge tank

with 12 in. of fine sand immediately above the plate and in succession above it the following amounts and grades of sand and gravel: 6 in. medium sand, 6 in. coarse sand, and 4 in. each of fine, medium and coarse gravel. The salt water enters the top and flows out of the bottom, any solid matter being retained in the filter.

A surge tank on the downstream side of the filters maintains correct water level in the system. The surge tank has a gas regulator for maintaining a pressure on the system, to the exclusion of any air, and a liquid-level control. In case the high-pressure pump cannot handle the fluid, the salt water is backed up through the filters and centrifugal pump. A low-level mercury switch shuts down the plant in case the supply of salt water is insufficient for operation.

The surge tank, being located on the downstream side of the filters, supplies the clean water necessary for backwashing. The backwash water flows in the reverse direction through the filters and discharges into a 2-in. line leading to open pits.

The high-pressure pump is a 6 by 10-in. duplex power pump capable of handling 6,000 bbl. per day at 50 s.p.m. It has a 6-in. suction from the surge tank and a 4-in. discharge to a second filter.

Discharge from the high-pressure pump passes through an Aloxite filter. This filter consists of a steel pipe filled with hollow corundum cylinders having a permeability of 22 millidarcys; the filtering element is slightly over 9 ft. in length. The water enters the outside of the filtering element and leaves through the center.

In addition to the 4-in. discharge to the disposal well, a 4-in. bypass permits backwashing of the high-pressure filter. Backwash water is taken from the surge tank and is discharged through a 2-in. line into the pits. A gage on the well head shows the injection pressure.

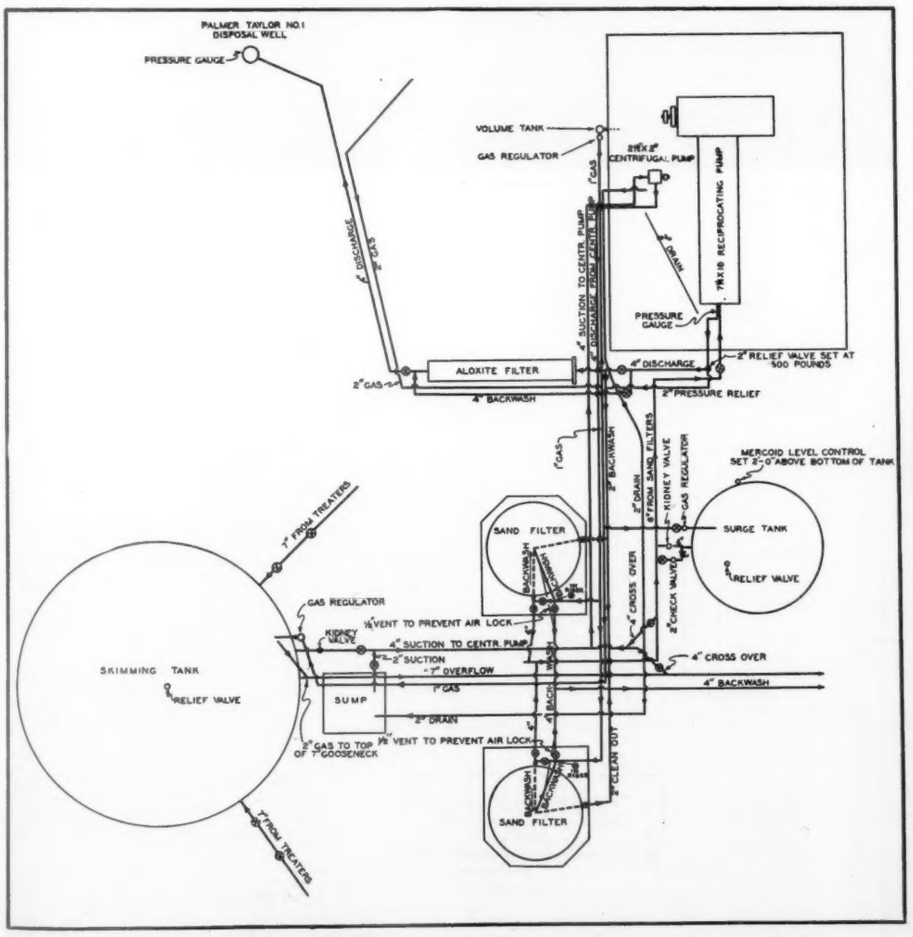
Parts of the piping system requiring maintenance are contained in a trench covered with heavy boards. This permits easy repair and manipulation of the few valves necessary for backwashing. Provision is made for inserting and removing scrapers to remove deposits on the inside of the pipe.

Disposal Well

The water when ready for disposal is in the same condition as when it is produced. It contains no iron and only a small amount of reducing compounds and bicarbonates. The average pH is 6.7.

The disposal well required a pressure of 550 lb. per sq. in. for injection of 5,500 bbl. of water into the Tar Springs sand and there was no evidence of plugging of the formation. It was desired to increase the input rate without increasing the pressure and the Tar Springs was sealed off by running a cement retainer as a bottom-hole plug.

Pennsylvanian sands at about 1,800 ft. carry brackish water and it was desired to learn whether they would be suitable for a disposal zone. The casing was gun-perforated opposite these sands and water injected at 455-lb. pressure for 5,500 bbl. per day. The pressure later rose to 500 lb. for the same input rate and both zones are now being opened. With two disposal zones available, the capacity of the well to take water will be increased with a slight reduction in pressure.



Engineering diagram of the surge tanks, filters and other equipment used on the disposal project

A description of the New

Toluene-Benzene Purification Plant

Follows

Toluene-Benzene P

A GREAT deal of interest has been created in a new toluene-benzene purification plant.

As far as practicable, this plant was designed to process either petroleum oils or byproduct coke distillates but at present it is in the latter service.

The plant was designed and built by Petroleum Engineering, Inc., and essentially includes effective and compact chemical purification equipment and an unusually flexible and responsive fractionating unit. The toluene and benzene produced each distill within a boiling range of 1.0° C. in actual operation, but for plant-test purposes this difference was reduced to 0.2° C. to prove the effectiveness of the unit. A typical set of distillation results on the routine production of the two products appears below:

TOLUENE	°C.	BENZENE	°C.
Initial	109.8	Initial	79.7
10 per cent	110.3	10 per cent	80.2
20	110.3	20	80.2
30	110.3	30	80.2
40	110.3	40	80.2
50	110.4	50	80.3
60	110.4	60	80.3
70	110.4	70	80.3
80	110.4	80	80.3
90	110.5	90	80.3
Dry point	110.5	Dry point	80.4

In addition, each of these products passes the Barrett acid wash No. 1, shows a negative corrosion-test result, shows no acidity, has a 25 plus color and is free of hydrogen sulfide. The benzene has a solidification point of 5° C.

Operation of Plant

The new plant is designed and balanced to process 20,000 gal. of coal-tar distillate per day. Considerable flexibility had to be provided throughout the plant because of the varying nature of this distillate. Some of it contains as little as 6 per cent toluene when received while other shipments include up to 35 per cent toluene.

In actual operation these differences are minimized by blending the shipments in a large tank and when this is full it serves as the feed or charge tank until emptied. Thus, it is only necessary to make adjustments in flow-rates, temperatures and pressures when cutting into a new tank and even this can be minimized as quantity production is developed.

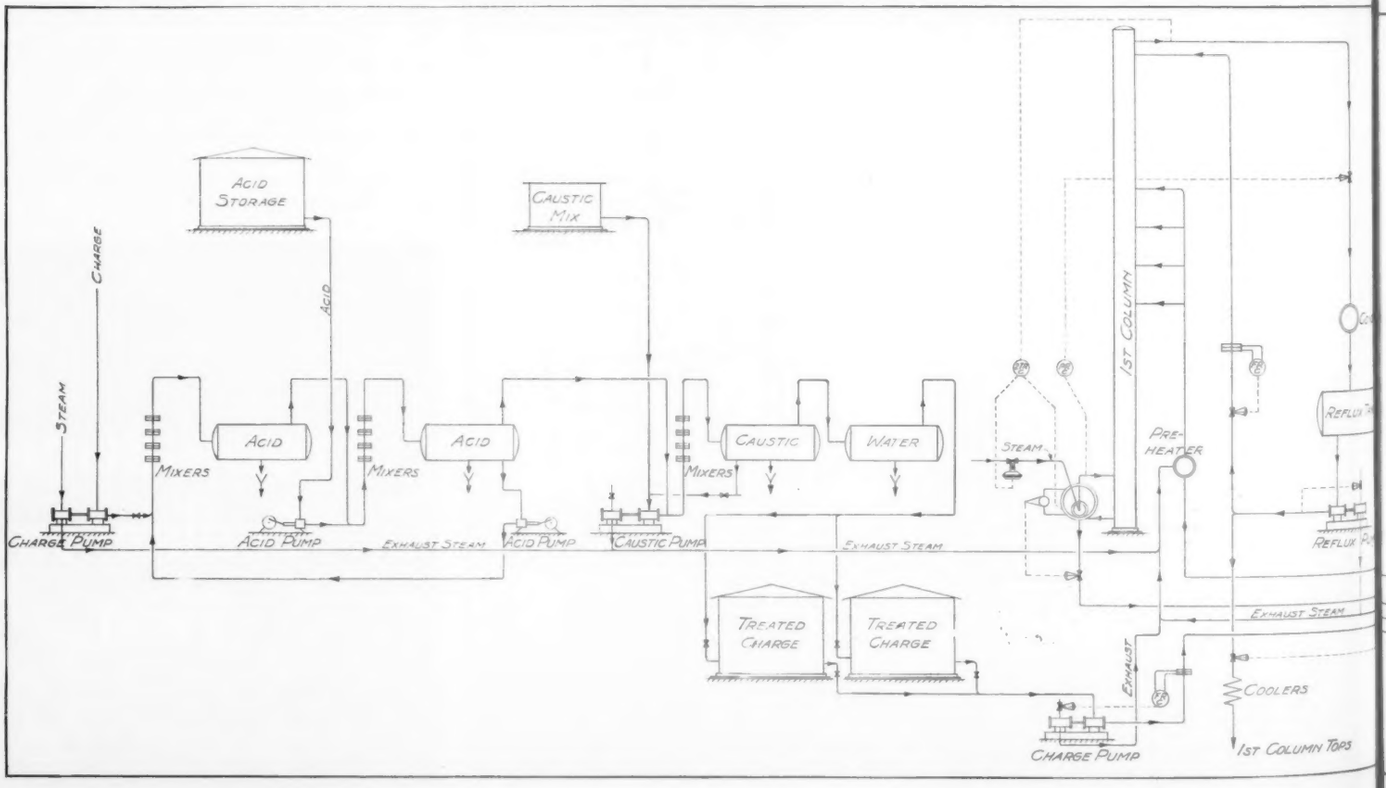
Acid Treatment

As the distillate comes to the unit it is

TOLUENE and benzene are especially important war materials. They occur most abundantly in coal-tar distillates but some toluene and benzene may be fractionated directly from petroleum, especially the naphthenic oils of Borneo, California, Arkansas, and Louisiana. The largest quantities, however, are potentially available as a result of synthesis, during which petroleum can be used as a cheap and plentiful source of hydrogen and carbon. As early as 1914 a broad federal program was outlined to manufacture these from petroleum but no large-scale production developed.

In this article the author describes a chemical treating and fractionating unit which has an unusually high degree of flexibility and for the time being this unit is recovering toluene and benzene from coal-tar distillates. If the need should arise the equipment could be placed in petroleum service to produce specialties of very narrow distillation range.

Here the name of the operating company and the location of the unit are being withheld from publication at the request of the company in the national interest.



Purification

By W. T. ZIEGENHAIN

first contacted with recycled sulfuric acid and any portion of the distillate which reacts with the acid drops out as a heavy sludge.

Contact between the distillate and the acid is accomplished in a vertical, 3-in. section of pipe containing orifices and baffles. Approximately 50 times as much distillate is pumped through the contact tower as acid.

The mixture then flows to a horizontal drum where the acid and sludge separate from the distillate and are continuously withdrawn from the bottom. From here the distillate is taken off the top of the drum and pumped through a second contact tower of similar design and dimension where it meets a stream of new acid. The volume of acid is again about one-fiftieth that of the distillate. In this manner the distillate is given a dual acid treatment.

This mixture then passes to a second horizontal drum separator where any additional sludge settles out along with the acid. The acid which separates out at this point is used for the initial treatment, thus the same acid is contacted with the distillate twice during each cycle.

After the distillate has been freed of all impurities which may be removed by sulfonation during the acid treatment, the distillate is contacted with a dilute caustic wash in the same type of equipment as used for contacting the acid and distillate. The caustic-treated distillate then passes to a series of two horizontal settling drums in which all of the caustic solution and any particles of sludge are allowed to settle out.

From the top of the second settling drum, the treated distillate is continuously run to a work tank from which the distillate is withdrawn to be processed through the fractionating unit.

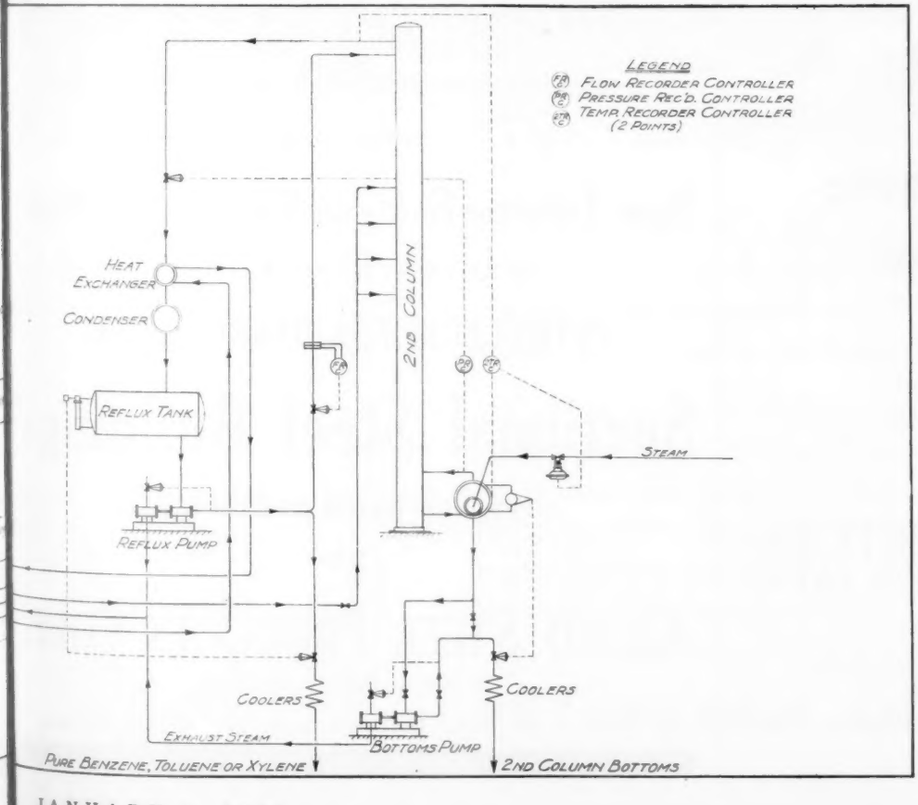
Distillation Unit

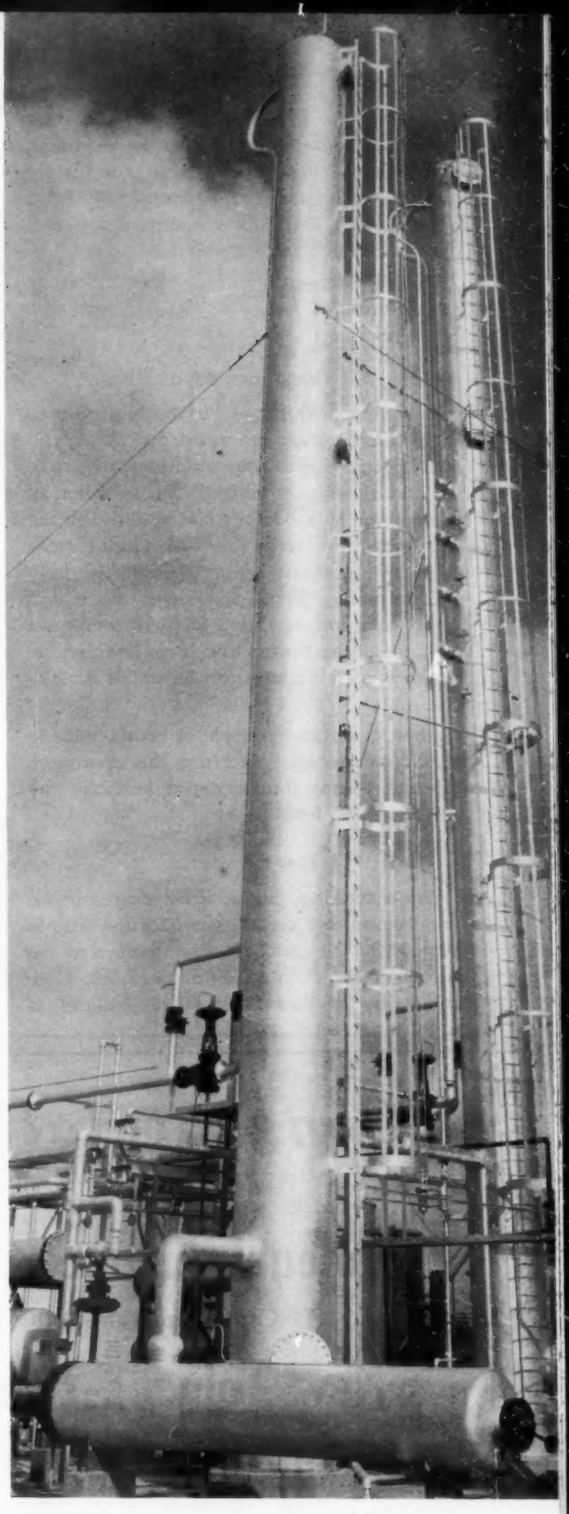
This unit is comprised of two columns, each 61 ft. high, connected in series and served by steam reboilers together with the conventional exchangers, tanks, lines, etc. A feature of the unit is its high degree of instrumentation, and the resulting close control over a wide range of flexibility for handling different charging stocks.

The same unit is designed and used to effect two distinct separations. During the initial operation the chief function of the two columns is to remove all paraffinic oils boiling below benzene and to make a practically complete separation between the 1° C. benzene and the crude toluene fractions.

The charge to the final fractionator ranges between 600 gal. and 900 gal. per hour and approximately an equal quantity of the overhead, condensed reflux is pumped into the tower to bring about the 1° C. fractionation or separation.

The finished stream of toluene comes off





Above: Two 61-ft. towers in which the high degree of separation is effected. Note four points of inlet on each tower. This provides flexibility in control

Left: Simplified flow chart showing steps in chemical treatment of coal-tar distillate followed by fractionation. The same distillation equipment is used to effect two distinct separations. First the unit recovers 1° C. benzene and then while rerunning the residue, 1° C. toluene is recovered. Heavier oils, including xylene, may be recovered during subsequent rerunning

the top of the tower as a vapor and after giving up some of its heat to the incoming raw charge, the overhead is completely liquefied in a water-cooled condenser. From here it goes to intermediate tankage and then to storage for shipment.

During such a run the production of toluene ranges between 490 gal. and 730 gal. per hour.

Instrumentation

A feature of this plant is the high degree of instrumentation whereby practically all of the processing is done automatically, once the operation is stabilized. The selection of control points is complicated slightly by the fact that flow rates and heat-input rates must be correlated to vary proportionately and instantly. In all instances, the instruments and controls have been located near the base of the towers and have been segregated to permit control of the entire distillation unit.

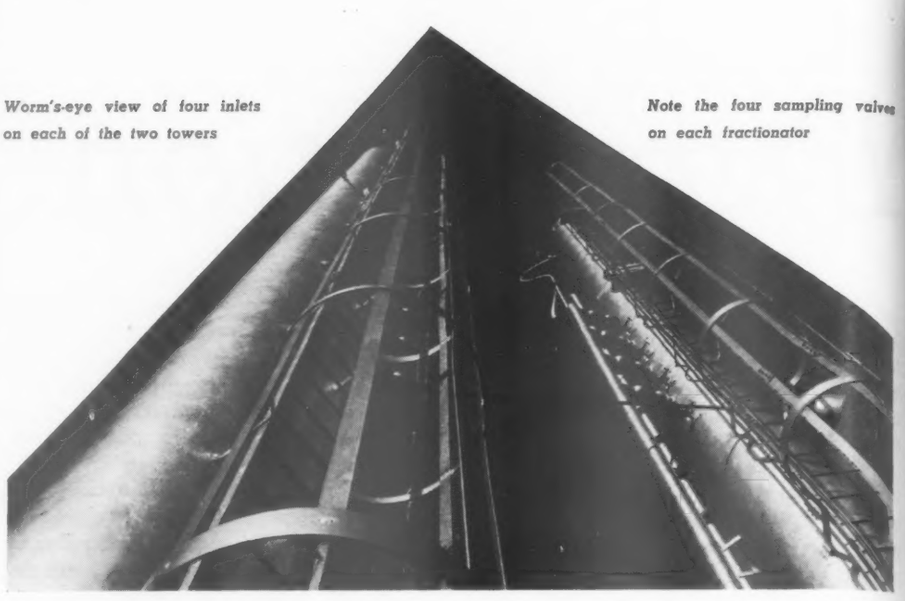
After a sufficient stock of crude toluene distillate is accumulated from this operation, the unit reruns that material to make the finished 1° C. toluene.

First Separator

When making the initial separation the acid-treated and caustic-washed distillate is charged to the distillation equipment at the rate of 1,000 gal. to 1,200 gal. per hour. Controlled by a flow-meter, the distillate is pumped through an exchanger which receives heat from the overhead vapors coming off the second tower. Here it picks up about 80° of temperature (°F.) and then passes through a steam preheater to raise its final temperature to 250° F. At this temperature it enters the tower through one of four connections into the side of the tower, located as a group approximately two-thirds of the distance from the base to the top.

Heat is supplied to the tower at its base by means of a live-steam reboiler and control is effected by returning a liquefied portion of the paraffinic-oil overhead. The reflux approximates 1,200 gal. per hour and while this appears rather high, it has been found to be economical and essential to remove a maximum of the paraffin hydrocarbons at this point.

The stripped distillate residue leaves the base of the first tower after passing through the steam-heated reboiler to enter the side of the second tower through any one of four inlets, grouped about half way to two thirds



Worm's-eye view of four inlets on each of the two towers

Note the four sampling valves on each fractionator

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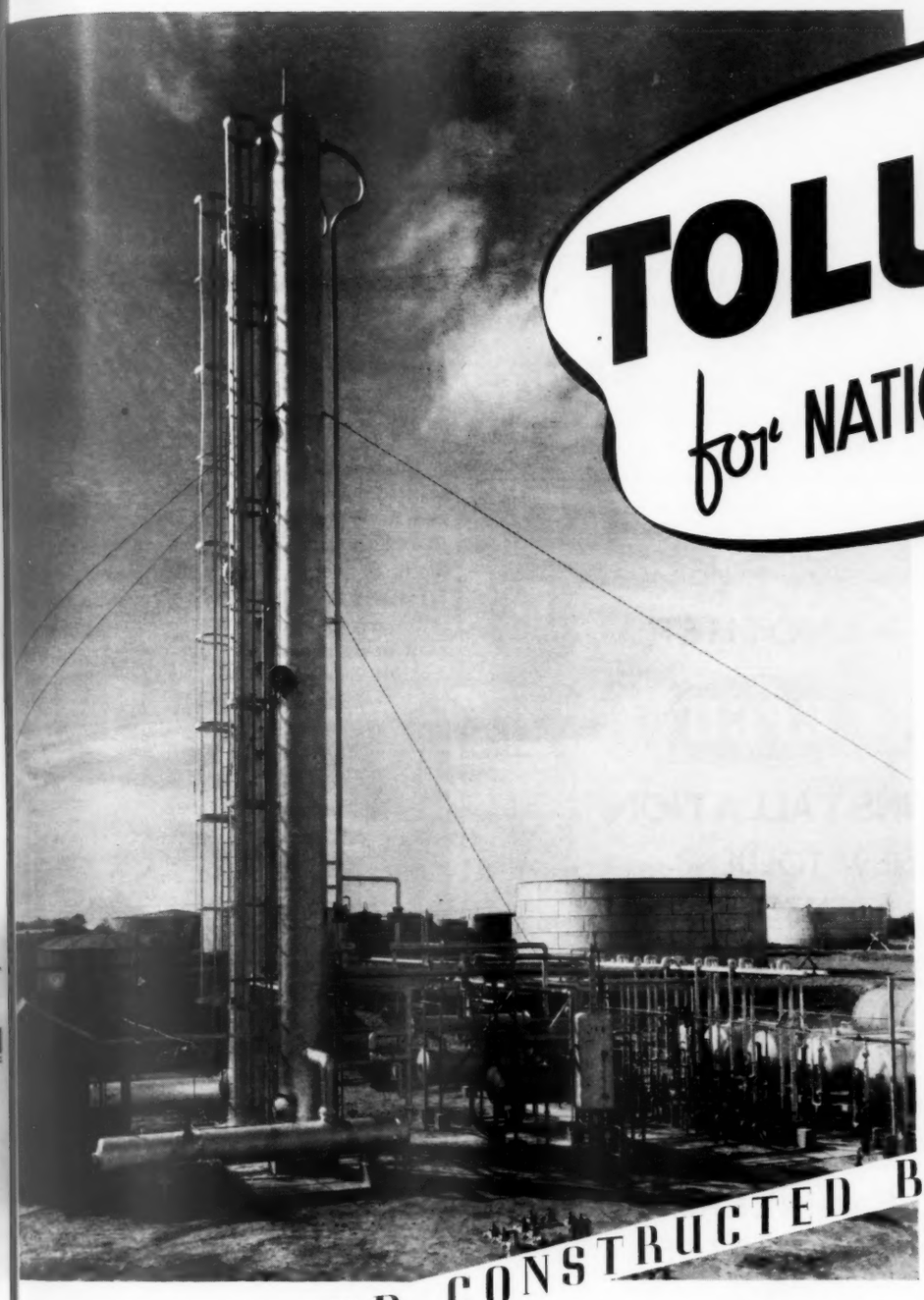

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Dry Point 110.5° C.
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Acidity—None
H_2S—None
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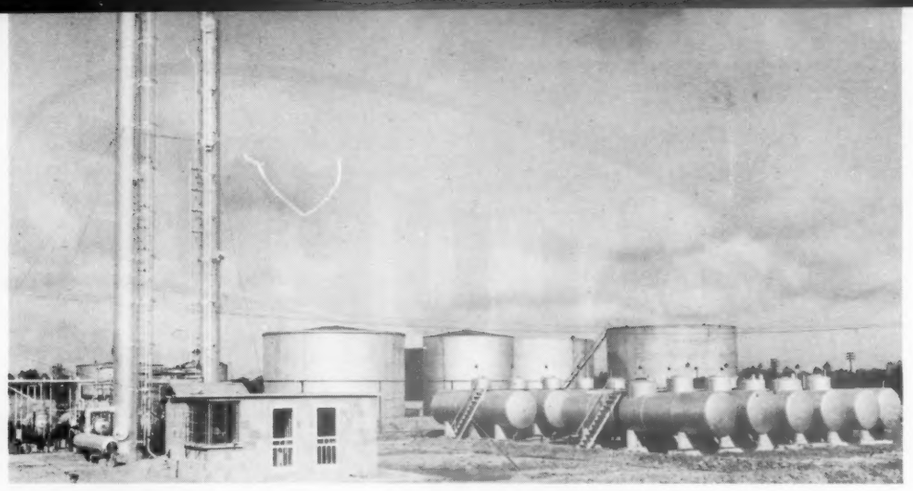


General view of plant tankage

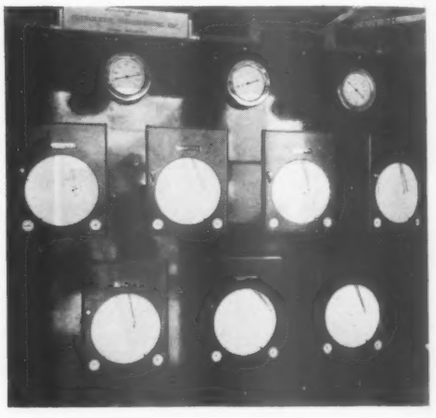
the distance up the tower. The temperature of the distillate may vary, between 280° F. and 325° F. as it enters this fractionator.

This tower is 36 in. in diameter and from here the 1° benzol is taken overhead and the residue contains all the toluene, xylene and some higher-boiling oils.

The residue is proportionately small in volume, representing from 5 to 35 per cent of the charge and this material is accumulated to serve as the charge to the unit for the recovery of toluene alone. Obviously an entirely different set of temperatures is maintained when this mixture is rerun.

Toluene Recovery

The rerunning of the residue for the recovery of toluene follows the same general procedure. When this is in progress, from 700 to 1,000 gal. of the material are charged to the first tower each hour. The crude toluene is freed of a small quantity of benzene which is recovered as an overhead in the same manner as the paraffin oils are stripped off the raw distillate during the first operation.



Instruments segregated for close control of all parts of the distillation unit

Freed of this benzene fraction, the toluene residue is continuously fed from the base of the first fractionator to the side of the second.

After benzene and toluene are recovered, the residue is segregated for the recovery of xylene. The residue, when fractionated further, produces a 3° C. xylene and a heavy residue containing the higher-boiling oils. The latter is disposed of to plants which specialize in the recovery of heavy coal-tar naphthas, resins, etc.

Final Cooling of Products

Another feature of the equipment is the manner in which the overhead or final products are segregated and finally cooled with the result that fractionation is improved and a saving in cooling water results.

Reference to the flow chart will simplify the explanation of this procedure by showing the equipment involved. It becomes evident that as the distillation proceeds, each finished overhead product is first cooled and liquefied in passing through conventional exchangers on its way to the reflux accumulator tanks. This tank is large enough to

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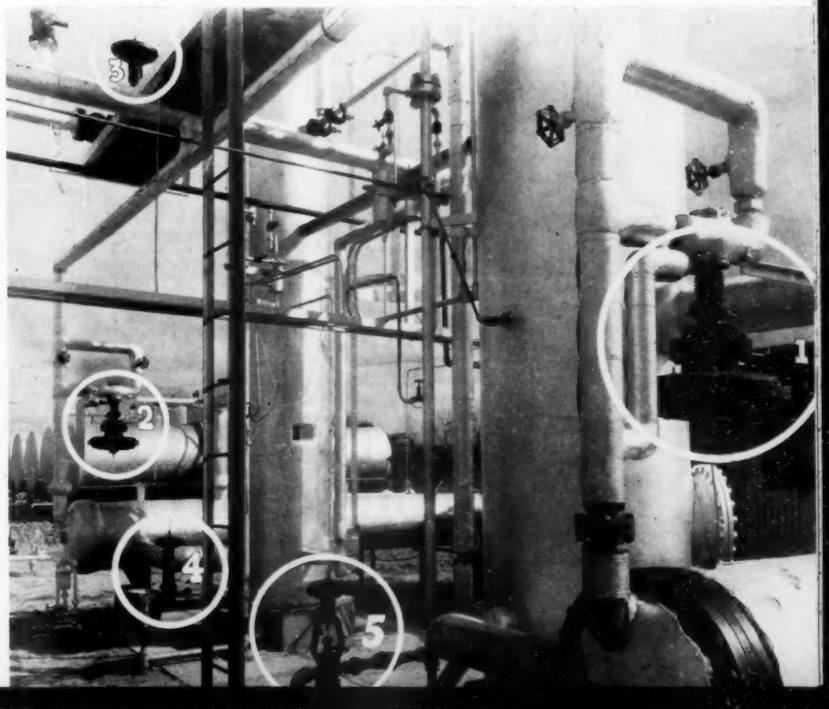

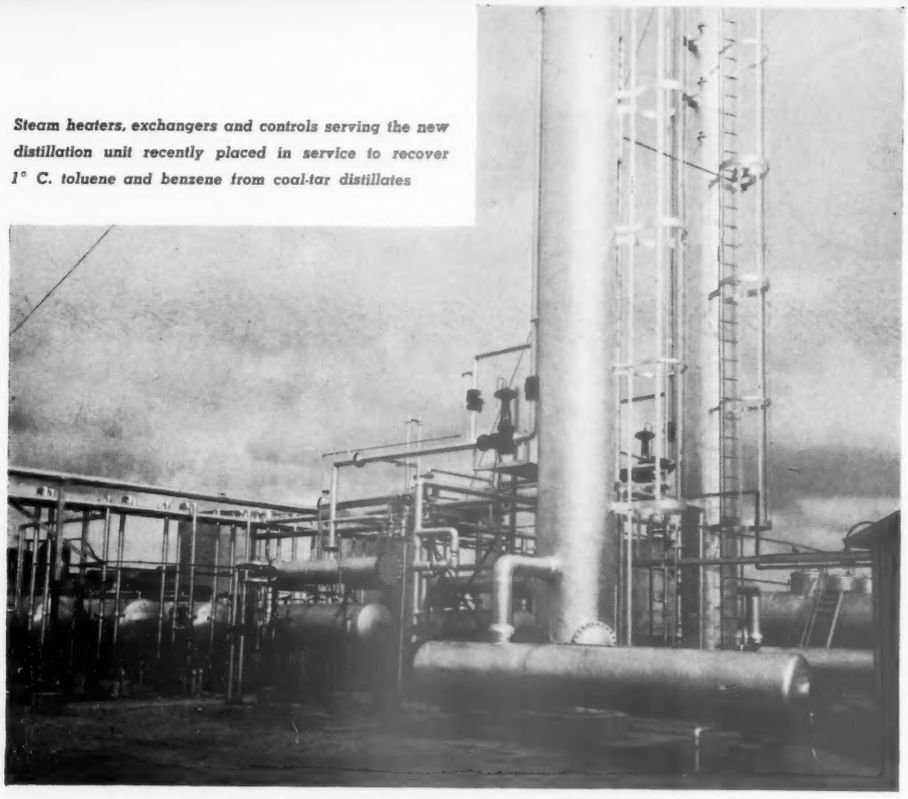

Steam heaters, exchangers and controls serving the new distillation unit recently placed in service to recover 1° C. toluene and benzene from coal-tar distillates

hold a considerable quantity of production and because of the constant recycling of the distillate from this tank and through the tower, it is easy to correct any tendency of the production to get through and not meet specifications in every detail. After the operator is satisfied that the contents of the tank are fully up to specifications and that production has been stabilized to meet all specifications, the liquid level in the tank may be maintained constantly by the automatic withdrawal of liquid. This has been made possible by the float control built into the work tank.

Note should be made also that there are two separate systems for handling the overhead from each tower and there is no connection between the two systems which would permit the slightest contamination of one product with the other.

Utilities

Steam is supplied to the unit from the adjoining terminal plant and is received at the unit at about 140 lb. pressure. Most of this steam goes to the reboilers serving the fractionating columns where it liberates heat to carry on the distillation.

Additional steam goes to the process pumps which are of the reciprocating type. All of the exhaust from these pumps is piped to a drum for water and steam separation. The heat available from each is utilized to preheat the charge to the unit. Because condensation is carried on here at a low pressure, maximum utilization of the available energy is realized.

The electricity needed to operate the various motors and lights is purchased from the local public-utility company.

●

Cleaning Agents Vary Friction-Test Results

In a broad study of static friction of lubricated surfaces, A. Fogg, M. Sc., and S. A. Hunwicks, B. Sc., of the National Physical Laboratory of England, suggest that surface absorption of "cleaning" materials introduces serious errors in test results.

For instance, they say, a steel surface with an original static coefficient of 0.58, when "cleaned" with trichlorethylene showed a coefficient of from 0.33 to 0.45, the higher value representing vapor cleaning, while the lower coefficient resulted from cleaning the surface with trichlorethylene in liquid form.

In contrast, it was found that after "cleaning" the surface with the finest grade of emery paper available (0000 blue black) the original coefficient of friction was restored, indicating that the sanding had removed the surface layer with the adsorbed contaminating material.

An even more pronounced effect on friction of adsorption of materials by the surface being lubricated was found when using oils containing colloidal Acheson graphite. When such oils were removed by flushing with benzene, the static friction of the surface remained identical as during the test with the oil present, indicating that the fine graphite particles had been adsorbed in the surface material—forming a "graphoid" surface. As a check on this, the same type of oil without colloidal graphite was applied and flushed off with benzene, resulting in a much higher coefficient of friction. Apparently, therefore, the lack of change in the coefficient of friction was due to adsorption of graphite rather than oil.

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Practical Drilling-Mud Treatment and Control

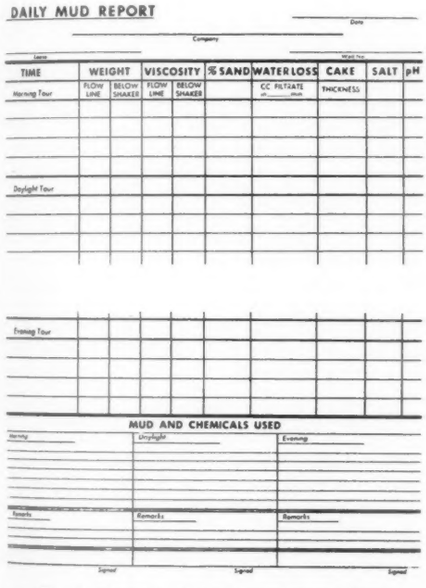
By C. F. BONNET and
NELSON A. HOWARD, JR.
American Cyanamid & Chemical Corp.

Chemical treatment of drilling mud for controlling viscosity, weight, water loss and other properties often makes possible savings in time and costs of drilling as well as providing insurance against blowouts. In this article equipment for chemical treating, mud-conditioning practices and the way chemicals are used to meet field conditions are discussed. The properties and uses of the chemicals themselves are dealt with in an article which appeared in the October 17, 1940, issue of The Oil and Gas Journal.

CHEMICAL treatment of drilling mud has been widely accepted because it saves money and improves mud quality. Savings in mud costs often more than justify chemical treatment. More important, when viscosity, weight and water loss of drilling mud are controlled to suit the location, wells are drilled faster; fewer bits and protecting strings of casing are needed. Still more important, mud with proper viscosity, weight and water loss at all times, provides insurance against blowouts and against many causes of stuck pipe; and this insurance cannot be obtained in any way except by mud control.

To keep drilling mud good, its properties must be tested and recorded at frequent intervals.[1] Several forms of daily mud reports have been devised. A typical example is shown in Fig. 1.

The viscosity of the mud should be low, the weight of the mud must be high enough to hold back gas, salt water or weak formations and the water loss must be low enough to give a thin


DAILY MUD REPORT

Date

Company

Lease — Well No.

TIME	WEIGHT		VISCOSITY		% SAND	WATER LOSS	CAKE	SALT	pH
	FLOW LINE	BELOW SHAKER	FLOW LINE	BELOW SHAKER		CC. FILTRATE at ___ min.	THICKNESS		
Morning Tour									
Daylight Tour									
Evening Tour									

MUD AND CHEMICALS USED

Morning — Daylight — Evening

Remarks — Remarks — Remarks

Signed — Signed — Signed

Fig. 1—Example of daily mud-report form

filter cake and protect the formation. Chemicals[2] provide the least costly and most efficient means for maintaining good mud which will insure against unnecessary trouble and expense.

Important Features of Mud Systems

The mud fluid circulated in rotary drilling is of such importance that a good deal of thought and trouble are applied to provide a good mud-handling system on the surface. An outline of features of surface systems that help to keep drilling mud good is shown in Fig. 2. Under actual field conditions, such a complete arrangement is not always used, but when drilling mud is important, all of the provisions shown in this outline should be provided more or less completely.

The important features of the surface system are:

1. Adequate volume provided by suction pit, mixed-mud storage and conditioning pit. Gas-cut or cement-cut mud can be diverted to the conditioning pit and its good properties restored before it is used again. In locations where rainfall is heavy, sheet-iron covers for mud pits prevent dilution of mud by rain.

2. Degassing and desanding. In some fields special equipment is installed to eliminate gas or sand. One effective way to remove gas is to have several mud guns on the conditioning pit for agitation. Fine sand is most effectively removed in a long ditch with a slope not greater than ½ in. per foot. If the long ditch is made double width with a dividing wall, one side can be used at a time, while the sand settled in the other side is sluiced into the waste pit with a hose. Settling pits are not as effective as ditches for sand removal because mud channels and the pit volume becomes "dead."

Chemical treatment of the mud to reduce viscosity and gel strength is essential for degassing or desanding by any method.

3. A separate mixing pump greatly adds to the flexibility of the mud system and permits independent pumping for mixing fresh mud, conditioning mud, agitation pits or circulating through degassing equipment.

Mud-Conditioning Practices

General practice in mud conditioning for practical well drilling is as follows:

Top hole, before setting surface pipe. — Little need for regular chemical treatment. Occasionally porous formations or shallow gas may give trouble. For lost circulation, mud viscosity is increased and fibrous material is added. For gas, gel strength must be reduced to a minimum. Weight material and enough gel to support it are added to raise mud weight. Before setting surface casing, mud should be conditioned with water and a little phosphate to assure low gel-strength mud that will be easily displaced by cement; and low sand con-

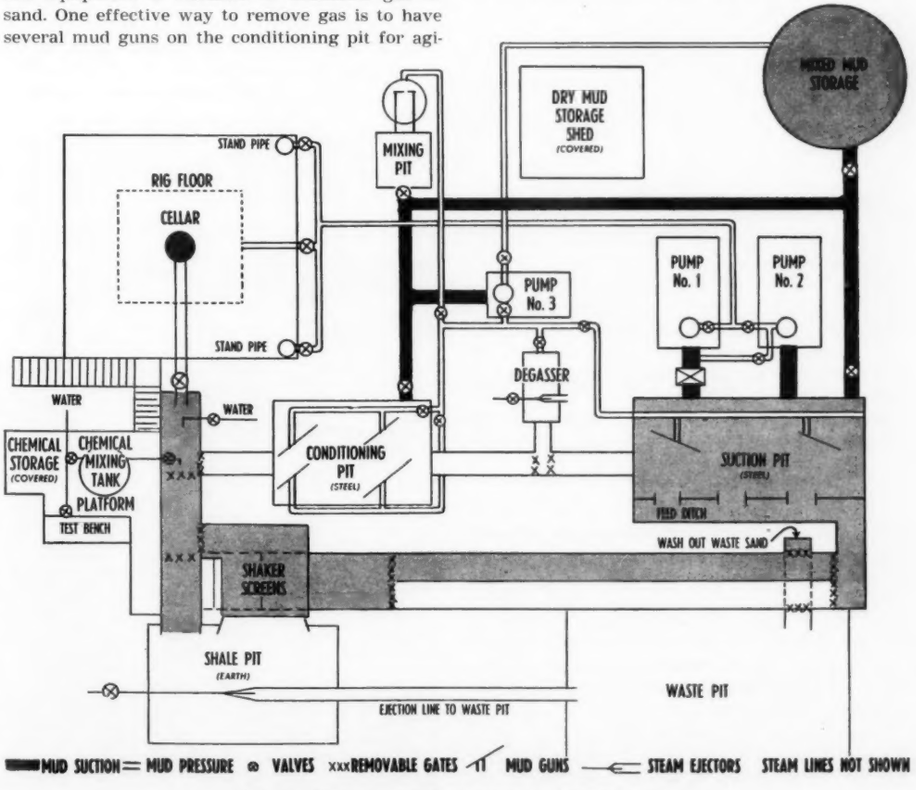


Fig. 2—Diagram of surface system for handling mud

1. "Testing and Control of Drilling Mud," Petroleum World, July 1940 issue.
2. "Chemicals for Treatment of Drilling Mud," The Oil and Gas Journal, October 17, 1940, and Petroleum World, October 1940.

tent to permit the casing string to run in easily.

Top hole, from shoe of surface casing to around 5,000 ft.—Cement contamination from drilling out the shoe of the surface casing should be eliminated promptly by treating with a phosphate to reduce pH. Frequently all the mud or the most badly cement-cut part is discarded and replaced with fresh mud.

In the early stages after drilling out of the surface pipe, drilling is fast and only light treatment is needed except in severe cases of lost circulation or shallow gas which are handled as described above. In some fields, treatment to reduce sand content is most important at this stage so as to lessen wear on pump liners and avoid stuck pipe or twisting off.

As the depth approaches 5,000 ft., particular attention should be paid to having viscosity as low as possible and to reducing water loss. Actual specifications for these tests depend on the field, but under most conditions viscosity should be 45 seconds A.P.I. or less and the water loss 20 cc. or less in 30 minutes by the time 5,000 ft. more or less is reached. Sand content should be watched carefully and kept low to avoid fishing difficulties.

Deep Hole.—Below about 5,000 ft. in most fields, drilling mud becomes a major factor of drilling progress.

When drilling in sandy or silty formations, sand must be eliminated in the surface mud system by having a long ditch and keeping low mud viscosity. Water loss must be kept low to hold a thin filter cake on the walls of the hole. For this reason, bentonite as well as phosphate, and sometimes tannin, must be added regularly.

In soft, sticky or bentonitic shale, good mud is essential. Low viscosity washes the bit clean and prevents sticky shale from "balling" up. Phosphate will control the viscosity.

A very low water loss is necessary to prevent bentonitic shale from increasing mud viscosity excessively. The low water loss must be obtained with phosphate, fresh bentonite and tannin *before* the troublesome shale is reached.

Low water loss is essential when drilling into low-pressure oil sands. Treatment with phosphate, tannin and bentonite before drilling into the sand will prevent excessive water saturation of the oil sand which may later be a cause of low production. Always, before running casing, mud should be conditioned with phosphate and water for low viscosity and gel strength.

Salt-water contamination of mud often causes serious trouble. Weight should be adjusted to hold back salt-water flows as much as is possible.

After drilling out cement, mud is contaminated; water loss and viscosity increase. Cement-cut mud always has a high pH, between 10 and 12. Neutral or slightly acid chemicals are necessary to reduce the pH to between 9.5 and 10 before the viscosity and water loss can be restored to normal by bentonite additions and regular chemical treatment.

Work is in progress to more successfully control salt and cement contamination with chemicals.

Equipment for Chemical Treating

To treat mud with chemicals, a mixing tank is set on a platform, or over the ditch itself, between the flow line and shaker screen. Lines for fresh water and steam should be brought to the mixing tank; a feed line with valve run from tank to ditch. Some means of measuring dry chemicals for mixing should be provided; such as a scale for weighing, or a gallon measuring can. Dilute solutions, 10 or 20 lbs. of chemical per 50 gal., are convenient to handle.

After mixing the chemical solution, it is fed to the circulating mud in a small stream, about pencil size. This stream is varied according to the need for chemical treatment as indicated by viscosity and water-loss tests of the drilling fluid.

Chemicals should be selected on the basis of safety, simplicity and economy. When chemicals are tested in any mud, the effect of repeated treatment with the same chemical should be considered. Some chemicals that work well at first may later hinder treatment when it is urgently needed. Certain phosphates have been found by experience to last longer under hole conditions and are to be preferred for general use.

Safety, simplicity and reliability of the chemical used are the most important factors in obtaining the economical insurance against trouble that results from successful mud treatment.

•

SAFETY - Quick-Closing Valve Shuts Off Engine

ONE of the slogans currently used by safety departments is "Accidents don't happen, they are caused." Granting the validity of the statement, it follows that the surest way of preventing accidents is the elimination or control of the causes. The accompanying photograph shows one method used to prevent the type accident most feared by rotary drilling crews—failure of the engine throttle to close. Fortunately, this happens only rarely.

Due to the manner in which the rigs are operated, the failure of a throttle can have the most serious of consequences. When the blocks are being elevated to pick up a stand, they are run at their maximum speed of about 15 ft. per second. On the average 122-ft. derrick, the traveling-block assembly (including hook and elevators) will total about 20 ft. in length. This leaves 102 ft. in which to handle the 90-ft. stands of drill pipe or 12 ft. of leeway. The amount of space is further reduced by the fact that the drill pipe in the hole protrudes about 3 ft. above the rotary table. When a stand of pipe is lifted high enough to screw into the pipe in the hole, only about 9 ft. are left between the crown and traveling blocks.

Fortunately, the driller closes the throttle when the top of the block is about 20 ft. from the crown. On some rigs the throttle is closed sooner and on others later, depending on the way the rig coasts. Because of the light load, the throttle is seldom opened more than one-fourth turn when running the empty blocks; it, therefore, takes only a very short time to close it. When the pipe is being pulled from the hole, the speed attained by the blocks is not so great and hence the danger is reduced, but not eliminated entirely. From the economic standpoint, jamming a loaded traveling block against the crown block has a more serious result as the tool joint may be broken off the pipe, thus allowing the pipe to fall in the hole.

There are a large number of things which may happen to a throttle valve to prevent its closing. The threads on the screw may become worn or damaged. The seat may come loose from the stem. The rod from the wheel to the valve may be broken, come unjointed or one of the pins may fall out of it. Sometimes the wheel itself comes off. The universal joint connecting the rod to the valve may break. In one unusual case, the brass gasket from a union on the steam line got in the throttle valve.

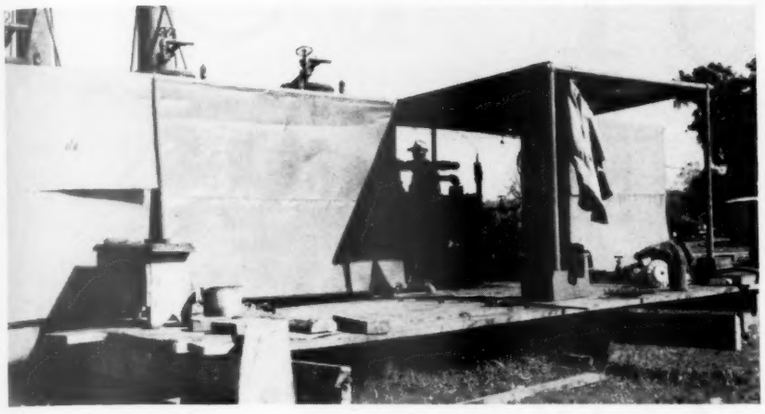
Some drillers are strong enough to pull the reverse link to the center position while the throttle is wide open; this allows the drum clutch to become disengaged. While this is better than running the traveling block into the crown and should be at least attempted in case the throttle cannot be shut, it is no job for striplings and even the strongest driller will take a beating while doing it. In case efforts to get the link on center fail, the only course left open to the drilling crew is to abandon the floor and pray some flying bit of machinery doesn't hit them.

If a means is provided for closing off the steam ahead of the throttle valve, the danger from the throttle valve's failure to close is practically eliminated. The driller then can grab the emergency lever and instantly shut off the steam from the engine. A quick-opening and quick-closing valve, or a throttle valve, should be used as the driller has only one second in which to do the following three things: (1) Realize the throttle will not close; (2) pull the emergency cord which shuts off the steam, and (3) apply the brake to the drum.

By the time the driller gets all this done, the traveling block will probably be within a foot or two of the crown block. If he had to close a screw-type valve, the two blocks would have already come together, the drilling line would be broken and the traveling block would have started falling back to the floor. If the drilling line failed to break, matters wouldn't be any better as the derrick would be pulled down. It is evident that a safety valve ahead of the throttle is a necessity.

Because a safety valve has been installed is no excuse to neglect the throttle and the control assembly. It should be inspected regularly and if it doesn't work properly should be repaired or replaced. It is the main control point on the drilling rig and if it fails, someone is almost certain to be injured.

Operating Ideas



Pump House Sides Serve Dual Purpose

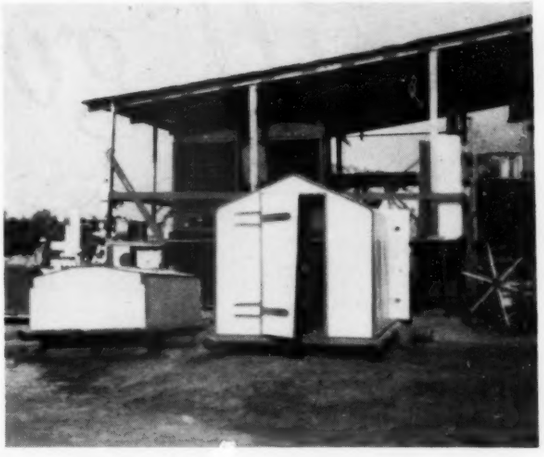
By making the sides of the house enclosing the feed-water pump setup of steel, and hinging them to the top with pipe sockets rotating around the main frame, the separate panels may be dropped to fully enclose the unit for transportation, or raised and propped in elevated position to form a roof over the working floor. The hinged posts forming the corner supports for the raised sections extend across the pump unit when in the folded position, lying between pumps and connections so as not to form obstacles or interfere with work around the pumps.

Lubricator Guard on Power Slush Pump

The lubricator on a power-driven slush pump, located on the frame between the crosshead guides and the gear cover, is in a position where it is exposed to damage through heavy objects being dropped on it, or piled there when on the move to a new location One drilling contractor welds two short sections of heavy I-beams to the pump housing, and places across these a heavy grill of sucker rods. The guard entirely screens the lubricator, but permits access through the gaps between bars for adjusting feeds or replenishing the oil supply. The grill is amply strong to support any piece of equipment which may happen to be placed thereon.

Bracket Carries Suction Hose

To permit locating the boiler feed-water suction hose in deep water and regulation of the level from which suction is taken, one company makes effective use of a welded pipe bracket which turns in its pipe support, and yet supports the end of the suction hose in nearly a vertical position. This is in contrast to the usual method of laying the foot valve and strainer on boards or a piece of old tank plate bedded in the mud of the pit bottom. Support of the suction hose by bracket and hoist relieves the pump suction of strain which must be borne if the hose is more or less rigidly held by its position in a trench, by enabling all vibrations to be absorbed by the free length of hose.



Auxiliary Steel Tool House

Steel tool houses are a standard part of a rotary rig but generally they must also serve as dog houses in which the men may store clothing and personal equipment. Generally the tool house is too small to accommodate, without crowding, all of the equipment which must be carried in it. Many contractors have gone to designing special tool boxes for the storing of small heavy pieces of equipment. One such box is shown above alongside the usual steel tool house. It is purposely built shallow so material will not be piled in it and so heavy pieces of machinery may be easily removed from it. It has two lids hinged in the center, and when they are raised there are no braces or other members to hinder a man in locating and removing the desired part from the box.

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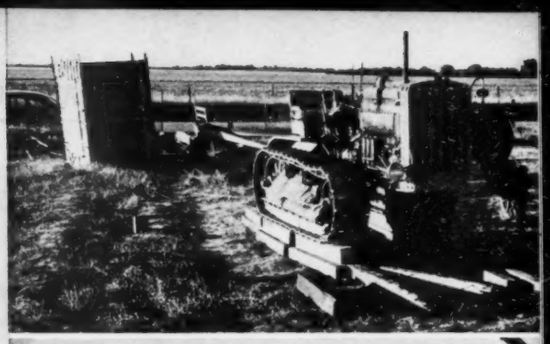
ENGINES AND ELECTRIC SET

No. 1. After nine years of the heaviest kind of jobs—contracting and logging—this "Caterpillar" Diesel Tractor is still turning in a full day's work on the lumbering operation of Howell & Howell, Quincy, California.



No. 2. In 7000 hours of operation, this "Caterpillar" Diesel saved W. C. Schuder & Son, Woodland, California, $3750 on fuel! Still on active duty—pulling such heavy loads as three 5-bottom 12-inch plows.

No. 3. Some of the world's heaviest pulling is found in the sugar-cane fields. This "Caterpillar" Diesel Tractor has had 18,683 hours of it—and is still good for many thousands more, according to the Oahu Sugar Co., Waipahu, Oahu, Territory of Hawaii.

No. 4. The engine was removed from the No. 4 "Caterpillar" Diesel to power this washing machine on a gold-and-gravel operation near Caledonia, Virginia. Runs 10 hours a day on 3½ gallons of fuel an hour. Has operated a total of more than 30,000 hours!

No. 5. Started out on the Mississippi levees for Harry Rodgers, Colfax, Louisiana. Engine later turned into a power-unit and has driven two cotton-gins and a lumber-planing mill. Now powering a drag-line. Estimated operation: 35,000 hours!

No. 6. The details on this machine are included with those of No. 10 below.

No. 7. More than 16,640 hours behind this seventh "Caterpillar" Diesel which went to work in December, 1931. Has probably spent most of its life to date on road-building and maintenance. Still at work for its original owner: Georgia State Highway Department.

No. 8. The details on this machine are included with those of No. 10 below.

No. 9. After five continuous years of construction work, starting in 1932, this machine was put on a lease basis for farming and construction. Still on the job! No record of its thousands of hours of operation. Owned by E. C. Hale, of Circle, Montana.

No. 10. This, and No. 6 and No. 8, formed part of a fleet of twenty purchased by Dumon & Vandervin, of Belgium, in 1931. They helped build the Albert Canal and were still in service as late as March 30, 1940. War conditions in Europe prevent obtaining complete details of their work-record.

PILLAR DIESEL

SET TRACK-TYPE TRACTORS • ROAD MACHINERY

Fundamentals and Cures for

Gravity Losses in Production And Handling of Crude Oil

By CLARENCE GLASGOW
Chief Engineer, National Tank Co., Tulsa

A.P.I.—Paper presented before December meeting of Seminole, Okla., chapter of the American Petroleum Institute, Division of Production.

THE oil industry is becoming more conscious of the importance of conservation than ever before in its history, due primarily to better understanding and knowledge of production methods, proration and other regulatory measures, national defense, and a more comprehensive understanding of the ultimate financial gain from cooperative methods of conservation.

Prevention of gravity losses from crude oil is one of the many phases of true conservation, and one that has been sadly neglected in the past as well as the present. Its importance is far reaching because crude-oil hydrocarbons, once released to the atmosphere, can never again be recovered.

Before entering into a discussion of gravity losses, it would no doubt be wise to briefly explain gravity and its relation to crude oil.

Specific gravity is the ratio of the weight of a unit volume of oil to the weight of the same volume of water at a standard temperature. Unless otherwise stated, the specific gravity of oil is always corrected to a standard temperature of 60° F., and the specific gravity of water at 60° F. is used as a unit base or one. For example, a gallon of pure water weighs 8⅓ lb. and a certain crude oil has a specific gravity of 0.82; then a gallon of oil will weigh 8⅓ × 0.82 or 6.83 lb. The American Petroleum Institute has adopted what is known as the A.P.I. gravity, which is used almost universally where oil is bought and sold. The reason for adopting this scale was no doubt to eliminate the large number of decimal places needed in specific gravity and also to make temperature correction more uniform. The relation between specific gravity and A.P.I. gravity is:

$$°\text{A.P.I.} = \frac{141.5}{\text{Sp. gr.}} - 131.5$$

$$\text{or Sp. gr.} = \frac{141.5}{\text{A.P.I.} + 131.5}$$

The old Baume scale of gravity is still used in some foreign countries and in some research laboratories, but industry as a whole has adopted the A.P.I. scale as standard. The relation between specific gravity and degrees B. is:

$$°\text{B} = \frac{140}{\text{Sp. gr.}} - 130$$

When oil or any liquid is heated, the molecules expand and therefore a unit volume of that liquid becomes lighter. Thus, a gallon of oil weighs more at 60° F. than a gallon of the same oil at 100° F.; for this reason it is necessary to correct all gravity readings to 60° F. in order to establish a standard. Thus, when oil is heated above 60° F. the A.P.I. gravity increases at the rate of approximately 0.75° for every 10° F. increase in temperature. Therefore, if you read 40° A.P.I. on the hydrometer at 70° F., which is 10° above the base temperature of 60°, the corrected gravity would be 40° — 0.75° or 39.25° A.P.I. If this same reading were taken at 50° instead of 70°, or 10° below the base, the corrected gravity would be 40° + 0.75° or 40.75° A.P.I. However, for more accurate readings it is necessary to refer to the table on corrected gravity readings for various temperatures.

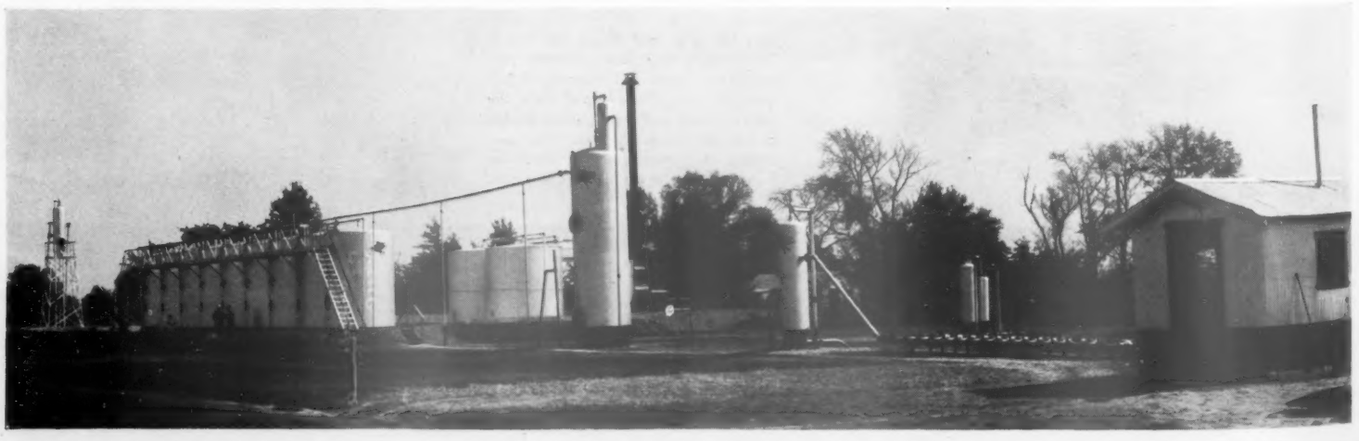
Since gravity is, therefore, a relation of the weight of the oil to the same volume of water at 60° F., it is apparent that any loss in gravity would mean a loss in volume. The Bureau of Mines has shown by examination of various crude oils having gravities between 30° and 42° A.P.I. that every degree lost in gravity results in a 2½ per cent loss in volume. Thus, a tank containing 1,000 bbl. of oil that loses 1° A.P.I. will shrink to 975 bbl., or in other words, 25 bbl. of this oil is lost to the atmosphere and can never again be recovered.

From various investigations it is safe to estimate that the average loss for all the oil produced in the United States from the time this oil reaches the surface of the ground until it enters the refinery, is approximately 1° A.P.I. The average daily production in the United States is approximately 3,500,000 bbl. A loss of 1° A.P.I., or 2½ per cent in volume on this amount, results in a daily loss of 87,500 bbl., or approximately 32,000,000 bbl. of the most valuable part of the crude oil is lost every year. Figuring oil at an average price of $1 per barrel, and 2 cents per barrel loss due to changing oil to a lower-gravity bracket, would result in a yearly loss of $32,640,000. This explains why gravity losses are so important to the oil industry, as well as the conservation of one of our most important natural resources.

The fundamental theory on cause of gravity loss is the theory of vaporization, and vaporization may be defined as the change of a substance from the liquid phase to the vapor phase. This is the only way that crude oil can lose gravity. The gravity may be reduced by adding water or a substance heavier than oil, but this is addition and not a loss. Thus, one way to prevent gravity loss is to prevent vaporization. Partial recovery of this loss can be brought about by condensation, which is the reverse of vaporization, that is the change from the vapor phase to the liquid phase.

It must be remembered in discussing vaporization of crude oil that crude is made up of many different types of hydrocarbons, each of which has a different characteristic as to vapor pressure, mol fraction and gravity, and any loss of the lighter

Installation designed to conserve gravity of oil produced on lease in Salem field of Illinois, consisting of separator, unit treater and 210-bbl. welded tanks which are vapor-proofed



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SERVING THE OIL AND GAS INDUSTRIES

ends from this crude naturally results in a loss of gravity because it leaves a heavier product.

The theory that is generally accepted as to vaporization is that the molecules that go to make up the various hydrocarbons in crude oil are in constant motion and these molecules bombard each other at the surface of the liquid with sufficient velocity to overcome the surface tension or molecular attraction of the liquid and thus escape as a vapor or gas. The light hydrocarbons possessing high vapor pressures have the greatest molecular movement and therefore these fractions are the first to leave the surface of the liquid, and at the same time will carry heavy ends into the vapor phase. The reason for this is that the high-velocity molecules or the light ends strike the slower-moving molecules, or heavier ends, with sufficient force to cause them to leave the liquid as a vapor. Thus, the first light vapors that leave the oil carry with them heavier ends, even though the temperature is much lower than their boiling points, but these combined vapors will always have a greater per cent of light ends and a less per cent of heavier ends than the liquid crude left. Therefore, a unit volume of this crude after vaporization will be heavier than the original, or in other words, a lower gravity.

Increasing the temperature of crude oil creates greater molecular movement; also, decreasing the pressure will cause the molecules to move with a greater velocity. It is also possible to get vaporization by evaporization, that is, the molecules of the liquid have sufficient energy to leave the surface even though the temperature is below the boiling point of all the constituents of the liquid, but to make this process continuous it is necessary that these escaping vapors be carried away as fast as they leave the surface, such as air moving over the surface of the liquid to carry away the escaping gases.

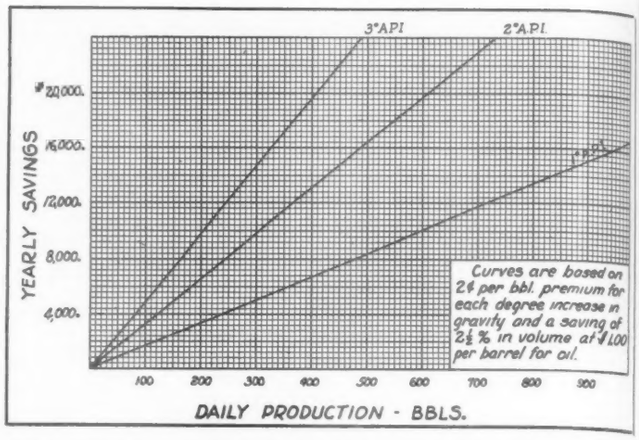
The five controlling factors that govern vaporization are:

1. Temperature.
2. Pressure.
3. The percentage of the surface area (mol fraction) covered by the component.
4. Molecular energy of the component (vapor pressure).
5. Total surface area exposed where vaporization can take place.

In the production and handling of oil, the only places where gravity can be lost is where the vapors are released and carried away from the liquid crude. Principally speaking, there are only four places in the normal methods of handling crude from the time the crude leaves the well until it reaches the refinery, where vapors are separated from the original crude. They are:

1. Separator.
2. Treating equipment, where used.
3. Field stock tanks.
4. Pipe-line storage.

Separators are used on wells where sufficient gas is produced with the oil to warrant its primary separation, and generally this gas is taken to a gasoline plant, repressuring plant or to a gas-fuel line. If this gas is used as above mentioned and the marketable vapors recovered, there is no loss in the true sense of conservation even though the separator is operated at a temperature and pressure such that the gravity of the liquid crude separated is actually reduced. However, if this gas is vented to the atmosphere it is highly desirable to operate the separator or separators at pressures and temperatures that will give the highest-gravity oil possible to be sold to the pipe line. These operating conditions must be experimentally determined by the producing company for each different type of oil and gas-oil ratios.



Graph illustrating the importance of gravity conservation. For example, if a lease has a daily production of 500 bbl. and gravity-saving equipment results in a 2° increase in A.P.I. gravity, a yearly savings of over $16,000 is shown

Oil produced at high pressures must be stage-separated at graduated decreased pressures to produce a stable oil in the stock tanks. Two or three stages have been found to be the most economical practice; however, more stages would produce a higher-gravity oil but not enough higher to warrant the initial investment in the additional equipment. A recent example of this condition was found by the M. H. Naylor Oil Co. in Louisiana. They were producing 3,000,000 cu. ft. of gas through one separator, operating at 650 lb. and the oil was produced direct to the stock tank at a daily average of 55 bbl. Later, a second-stage separator, operating at 60 lb., was installed on the oil line between the high-pressure separator and stock tanks. This installation increased their production from 55 to 62 bbl. per day, or an increase of 7 bbl., the gas production remaining constant at 3,000,000 cu. ft. per day.

In low-pressure separation where the gas is sold to the gasoline plant, it is desirable to elevate the separator so that atmospheric pressure or vacuum can be maintained. This increases the g.p.m. of the gas and makes more stable oil for stock because most of the light ends are removed, but the A.P.I. gravity will be reduced. However, in many places the producer would rather sell these light ends as crude oil, in which case it is necessary to increase the pressure on the separator and also reduce the temperature, if possible. This type of operation will increase the gravity of the crude oil, but will result in greater losses in the stock tanks unless they are equipped to prevent the vaporization of the lighter ends.

SOLUBILITY OF GASES IN OKLAHOMA CITY CRUDE AT VARIOUS PRESSURES

Pressure, lb. sq. in. abs.—	Methane cu. ft./bbl.	Ethane cu. ft./bbl.	Propane cu. ft./bbl.	Butane cu. ft./bbl.	Pentane cu. ft./bbl.	Hexane cu. ft./bbl.
1,103	252.0	91.0	58.7	22.7	4.5	1.6
455	113.4	75.1	53.2	19.8	4.5	1.6
132	24.1	53.8	45.4	16.8	3.9	1.6
29.2	1.3	14.2	21.2	8.9	2.1	1.0
14.35	.0	.0	.0	.0	.0	.0

From tests conducted by the U. S. Bureau of Mines on the solubility of gases in Oklahoma City crude at 70° and various pressures it was proved that the above statements are correct (see table).

Thus it is apparent that the lower the pressure, the less gas is in solution with the oil and, therefore, the less vaporization loss of this oil in the stock tanks—the gravity loss would be at the separator vent. For these reasons, it is necessary to operate separators to best meet field conditions from an economic standpoint and at the same time prevent as much vaporization loss as possible where gases are released to the atmosphere.

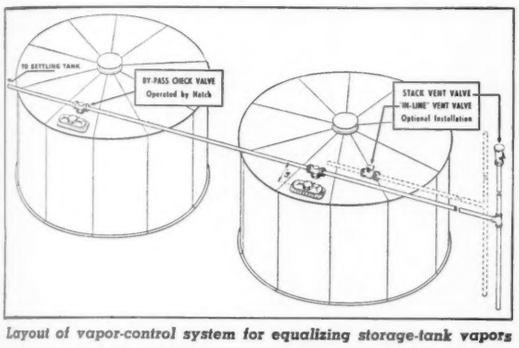
When water is produced with oil it becomes necessary to remove the water before the oil can be sold to the pipe line. In many cases the water is emulsified with the oil and it is necessary to use heat and chemical to bring about complete separation of the oil from the water. Since heat increases molecular activity and increases vaporization, it is apparent that considerable gravity can be lost through a treating system, especially when treating high-gravity crudes. As previously mentioned, the surface exposed for vaporization has a direct bearing on the rate of vaporization. Thus at a treating or settling tank where oil is being heated and a state of equilibrium has not been reached between

Two-stage separation eliminates much of the gravity loss by stabilizing the oil before it is run into the tanks

liquid and vapor, which is generally the case where only a slight amount of pressure is carried on the system, the rate of vaporization is in direct proportion to the exposed surface area for the same oil and constant temperature.

Thus, the rate of vaporization from a 16-ft.-diameter tank is approximately seven times greater than from a 6-ft.-diameter tank. From this line of reasoning it is apparent that for a given treating capacity it is best to choose the smaller diameter to prevent gravity loss. Probably the worst type of treating system, as far as gravity losses are concerned, is where the oil is heated and flashed into the flume of a large settling tank, allowed to remain in this tank under high temperatures for a long period of time and then permitted to flow to the stock tanks, where more vaporization takes place. Treating high-gravity crude in this manner will reduce the gravity of the oil from 2° to 4° A.P.I. In most cases it is desirable to treat at as low a temperature as possible to prevent gravity loss, unless some means is provided in the treating system for stabilization, in which case a slight increase in treating temperature may produce a more stable oil to stock tanks.

There are many different types of treating systems being used to remove water from oil, all having their advantages and disadvantages. To discuss all of these various systems as to gravity losses would be too large for a single paper.



Layout of vapor-control system for equalizing storage-tank vapors so as to exclude excessive air and to prevent undue waste of rich condensable vapors

There are hundreds of unit treating systems now being used throughout the oil industry which combine the separator, heater, and treater all in one pressure vessel. The greater percentage of these systems operate under a slight pressure, are relatively small in diameter to prevent excessive vaporization, have a means of condensing the heavier ends that enter the vapor phase due to heat, and lastly have a heat exchanger to reduce the temperature of the treated oil before it goes to the stock tank. Also, these systems, being pressure-operated, can have the gas outlet tied into the gas line going to the gasoline plant; thus all vapors released due to separation and heat can be saved and yet at the same time not reduce the gravity of the oil. This is another step towards the goal of conservation.

Many of these systems have shown a substantial saving in gravity and some have even shown a higher gravity of the treated oil than the original oil was before water was produced. A good example of this is shown by the Coronado Corp. in Refugio County, Texas. It had a lease from which oil was produced through two-stage separators, 450 and 60 lb., respectively. The average gravity of the oil sold to the pipe line before water was produced was 38° A.P.I. When the oil started to cutting, a pressure-type treater was installed and, much to their surprise, the gravity was increased to better than 40° A.P.I.

This system has been in service almost 1 year and there has never been a tank of oil sold under 40° A.P.I. since the treater was put into operation.

Lease storage tanks present another place where millions of barrels of oil have been lost through vaporization and this loss continues probably at the rate of thousands of barrels per day. To prevent part of this loss, many commodities are now using vapor-tight welded tanks, equipped with thief hatches and stack valves to hold from 8-oz. to 1-lb. pressure. Also, the welded tanks are smaller in diameter, which reduces the surface area for vaporization, and most of these tanks are painted aluminum to reflect the sun's rays rather than absorb the heat, resulting in a lower temperature and thus reduced vaporization.

Agitation is another means whereby losses can result. For example, allowing the oil to enter the top of the stock tank and fall to the surface of the oil; this produces agitation which releases hydrocarbons in solution and waves formed on the surface of the oil increase the surface area for vaporization. Thus, many companies are installing lines inside their stock tanks, with vapor outlets or vents at the top of the inlet pipe inside the tank, for the purpose of diverting the full flow of oil to the bottom of the tank with a minimum of agitation. In many places, this has shown from 0.3° to 1° A.P.I. increase in gravity of the oil.

Also, use of automatic vent valves on the equalizing line of stock tanks prevents some vaporization, especially where pressure is maintained. These valves are connected to the thief hatch by means of a level so that when the thief hatch is opened, the vent valve automatically closes. Thus the gas under pressure is only released on one tank instead of all the tanks in the battery; the valve then automatically opens when the thief hatch is closed.

Every time a thief hatch is opened on stock tanks carrying pressure, gravity is lost, due to the fact that the oil and vapor reach equilibrium at the pressure and temperature on the tank. When the pressure is reduced by opening the thief hatch, these rich vapors are released to the atmosphere and lost. When the tank is again closed, vaporization continues until equilibrium is again reached, so, therefore, the more times the thief hatches are opened the greater the gravity loss. In order to prevent this condition, some companies are installing automatic switching valves and overflow lines so that all tanks in a battery can be filled without the necessity of opening the thief hatches, except when the oil is sold to the pipe line. This may be fully accomplished by the application and use of visible gaging devices now obtainable, so that tanks may be filled to the top, and a very accurate gage obtained from the outside without opening the tank. Then, of course, as is customary, the pipe-line gager will insist on opening and thieving, and then gaging the tank to be run.

However, one of the most important phases of preventing gravity loss in all types of stock tanks is to produce into these tanks a low-temperature, stable oil. That is, oil that is free of unstable light ends that has a tendency to knock out the desirable ends in the oil. Therefore, if oil can be produced into the stock tanks at approximately atmospheric temperature and stable at the pressure and temperature on the tanks, gravity losses will be reduced to a minimum.

Pipe-line storage is another place where gravity can be lost, especially where the pipe line is buying a high-gravity, unstable oil. However, by the use of vapor-recovery systems and the use of floating decks on the oil to reduce the surface area, vaporization or gravity loss has been reduced considerably.

In conclusion, it may be briefly stated that gravity losses from the standpoint of true conservation can be greatly reduced by the use of proper equipment best adapted to operating conditions and character of the oil produced, and lastly, the education of the men on the lease as to the true meaning of gravity losses and the best methods of operating their equipment.

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BOOKS

*"THE PETROLEUM INDUSTRY: An Economic Survey," by Ronald B. Shuman, Price $3.**

Petroleum and its refined products are so vitally important to the life of society that it may be doubted that the failure of any other manufacturing industry, with the exception of the food industry, could as readily paralyze our normal pursuits. The economic status of the industry was never more important than now, considering the present state of world affairs. Hence the study prepared by Ronald B. Shuman, associate professor and head of the department of business management at the University of Oklahoma, is of timely interest.

Mr. Shuman discusses oil supply and demand, drilling and refining processes, transportation and storage, investment considerations, taxation, interstate restrictions, retail outlets, and other fundamental aspects of the industry in both its managerial and physical branches. He discusses petroleum byproducts, the natural-gas industry, and the growing emphasis in the industry on the scientific laboratory and the comptroller. For the first time in any balanced summary he introduces chapters on the vital present-day issues of conservation and control, marketing, and personnel management as it concerns the logical relationship of labor and management. Accounting systems used by the various companies, the determination of cost and price of gasoline, proration, and the arguments for and against government control are discussed in their several angles from an unbiased point of view.

*"The Petroleum Industry: An Economic Survey," may be purchased through the Book Department of The Oil and Gas Journal at the established retail price of $3, postage prepaid (extra outside the United States), and a copy will be forwarded promptly upon receipt of check or money order for that sum. Where payment is not provided, the book will be sent c.o.d. to avoid delay.

*"CONVERSION OF PETROLEUM," by A. N. Sachanen, 412 pp. Price, $6.**

Never before have the countries of the world looked upon the control of petroleum deposits with greater lust. So, with the United States in control of more than half the known deposits and commanding the best technological facilities for the conversion of these hydrocarbons into high-octane motor fuels, rubber substitutes, resins and explosives, a review of the various processes commercially available in the United States is both timely and appropriate.

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Progress in METALS

By W. L. NELSON

Effect of Surface Condition On Fatigue Properties

THE fatigue strength of drilling tools and equipment which is lowered into wells, is of primary importance to designers of oil-field equipment. Its importance lies in the fact that nearly all of this underground equipment is subject to fatigue conditions (alternating and reversal of stresses) and the fact that the penalty or cost incurred by a failure is greater than in other services or industries.

Among the factors which affect the fatigue strength are inclusions of foreign materials, type of microstructure, grain size, grain flow, surface decarburization, residual stresses, notches, grooves or fillets, and the condition of the surface. The last of these has been studied and discussed by Horger and Neifert in "Effect of Surface Conditions on Fatigue Properties" before the twenty-second annual convention of the American Society for Metals in October 1940.

Specimens were finished in the following conditions: Rough turn, smooth turn, polished with 00 emery, and superfinish (of the Chrysler Co.). Fig. 1 indicates the sizes of specimens, types of finish, and fatigue strengths. The strengths of the rough and smooth-turn specimens are about equal, but the polished and superfinished materials indicate a 10 per cent improvement in strength. The large specimens (3 and 5) exhibit a strength that is 6 per cent lower than for the smaller (0.3-in.) specimens. It should be noted that the large and small specimens are not geometrically similar because the irregularity in the surface of the larger specimens should be about five times larger. The seventh specimen is a forging and exhibits a fatigue strength of only 17,500 lb. per sq. in. as compared with 28,000-30,000 for the hot-rolled specimens. "One important conclusion gathered from all investigations is that a multiplicity of grooves or threads composing a surface provides a higher fatigue strength than one single groove." . . .

Three press-fitted assemblies are also shown in the figure. These consist of a wheel attached to the specimen by a press fit. This produces a severe stress concentration in the axle. The superfinish seat for the wheel exhibits a somewhat greater strength than the specimen which has a smooth-turn seat.

A greater increase in fatigue strength was caused by rolling of the surfaces than by any of the finishing methods that have been mentioned heretofore. Increases in strength of 16 to 32 per cent are shown by the use of pressure rollers.

NO.	SURFACE FINISH RECORD	MAGNIFICATION VERT.	MAGNIFICATION HOR.	DIA SPECIMEN IN.	INITIAL BAR DIA. IN.	TYPE SURFACE FINISH	DEPTH OF SURFACE FINISH MARKS MICRO INCHES - MAX.	FATIGUE STRENGTH PSI.
	PLAIN SPECIMENS WITHOUT STRESS CONCENTRATION							
1		1000	30	0.3	2.25	ROUGH TURN	1350	30,000
2		1000	30	0.3	2.25	000 EMERY	40	33,000
3		250	30	1.50	2.25	ROUGH TURN	3900	28,000
4		250	30	1.50	2.25	SMOOTH TURN	140	28,000
5		1000	30	1.50	2.25	000 EMERY	80	31,000
6		5000	250	1.50	2.25	SUPERFINISHED	35	31,000
7		250	30	6.	FORGING	SMOOTH TURN	1800	17,500
8		1000	30	0.3	7.	000 EMERY	40	33,000
	SPECIMENS HAVING PRESS FITTED WHEELS							
9		250	30	1.75	2.25	SMOOTH TURN	140	11,000
10		5000	250	1.75	2.25	SUPERFINISHED	35	12,500
11		250	30	7.	FORGING	SMOOTH TURN	2100	11,000

Fig. 1—Endurance-limit values for plain specimens of various diameters correlated with surface roughness (reduced two-thirds)

Metal-Treating Uses of Propane

An abstract—taken from Metals & Alloys, p. 79, July 1940.

PROPANE (C_3H_8) is one of the more important of the easily liquefied light fractions obtained in the stabilization of gasoline. The commercial use of these liquefied petroleum gases is growing; 165,201,000 gal. were made in 1938. These data and a review of propane applications are given in one article digested herewith; the other reports on the suitability of propane for flame-hardening steel.

Propane, generally speaking, is an ideal gas for industrial use, according to Clary, Sheely, and Fyke of Standard Oil Development Co. ("Industrial Uses of Propane," Welding J., N. Y., Vol. 19, Mar. 1940, pp. 192-194). The use of propane as a cutting fuel for steel is steadily increasing due to its economy both as fuel and in handling costs. It is used for this purpose in steel mills, fabricating and manufacturing shops, railroad shops, scrap yards, and for erection and dismantling work.

Commercial cuts having sharp corners, smooth sides and a drag sufficiently short to leave no firmly adhering slag, yet completely severing the plate at the end of the kerf, are easily obtained with propane. The same cutting speeds can be used with propane as with other fuels. One of the newest fields in which propane offers exceptional possibilities is for metal spraying. When operating continuously, savings as much as 50 cents per hour per gun are obtained because of the relatively low cost of fuel.

Considerable quantities of liquefied petroleum gases are used for industrial furnaces where heat treating or special treating processes are being carried out. The nonferrous metal-producing and fabricating industries use liquefied gases for bright annealing furnaces because of the exceptionally bright finish obtained. Propane is an ideal gas for carburizing. Experience has shown that liquefied petroleum gases are safe and economical as a fuel where a gas is desired.

The suitability of propane-acetylene mixtures for flame-hardening steel was studied by V. Thurnau ("Eignung von Propan und seinen Mischungen mit Azetylen fur die autogene Oberflachenhartung," Autogene Metallbearbeit, Vol. 33, May 1940, pp. 105-113). All gas mixtures and combustion ratios studied were considerably inferior in performance to straight oxy-acetylene. The inefficiency of propane as a flame-hardening fuel is attributed not so much to its low ignition velocity or flame temperature as to its chemical nature, which requires an uneconomically large amount of oxygen for correct combustion.

Welding Terms

Outline of Welding Processes

THE tentative definitions of welding terms of the American Welding Society, which has prepared a master chart of welding processes, when put into an outline form, are as follows:

I. Pressure processes.
  - A. Forge welding
  - B. Pressure thermite welding
  - C. Resistance welding
    1. Alternating current: (*a*) seam, (*b*) spot, (*c*) butt (upset or flash), (*d*) projection.
    2. Direct current: (*a*) spot, (*b*) butt (upset or flash), (*c*) projection.

II. Nonpressure processes (fusion welding).
  - A. Arcwelding (alternating or direct current)
    1. Atomic (shielded)
    2. Metal arc (shielded or unshielded)
    3. Carbon arc (shielded or unshielded)
  - B. Thermite welding
  - C. Gas welding
    1. Airacetylene
    2. Oxy-other gas
    3. Oxyacetylene (oxidizing flame, neutral flame, and reducing or carburizing flame)

III. Brazing processes.
  - A. Gas brazing
  - B. Furnace brazing
  - C. Dip brazing
    1. Metal bath
    2. Chemical bath
  - D. Electric brazing
    1. Arc
    2. Induction
    3. Resistance

Metallurgical Terms

Pearlite Malleable Iron

The definition of pearlitic malleable iron given by H. A. Schwartz in the 1939 Metals Handbook, is "White cast iron subsequently graphitized by heat treatment so as to intentionally leave significant amounts of carbon in the combined or graphitic form."

The term pearlitic malleable is not precisely justified from a metallography standpoint because the prevailing structures range between laminated, granular or sorbitic structures rather than typically pearlitic and hence definable distinctions are difficult to make.

Malleablizing to the pearlitic form may be accomplished by (1) special heat treatment of castings melted so as to arrest graphitization, (2) completely graphitized and then recombining some of the carbon, (3) by the use of special combinations of alloy elements with special heat treatments, and (4) by the use of alloy elements which can be used in the regular annealing methods contemplated in methods Nos. 1 and 2 just listed. The usual retarding elements are manganese (1 per cent or more), chromium (0.1-0.25 per cent) and molybdenum (1 per cent and frequently less than 0.25 per cent).

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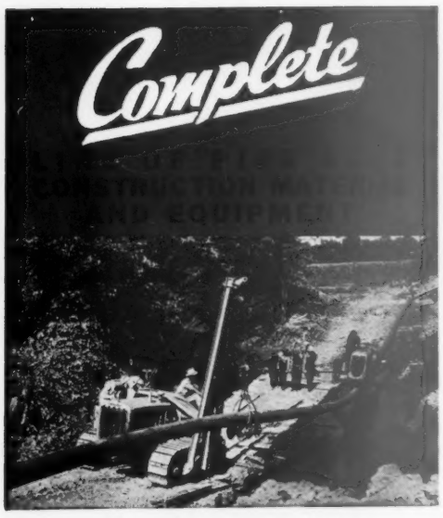

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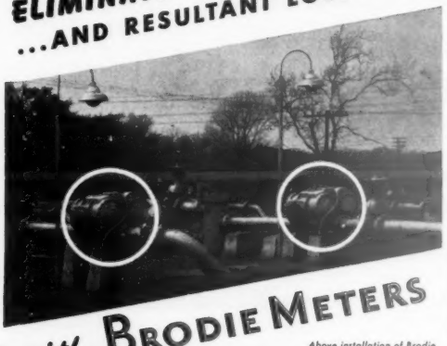

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Pipe-Line Activity

Southeastern Pipe Line Pumps Gasoline to Bainbridge, Ga.

BAINBRIDGE, Ga.—Southeastern Pipe Line Co. has started making delivery of gasoline here, being pumped from Port St. Joe, Fla., through a 96-mile section of the 450-mile project which was under construction in the first half of 1940. This is the first gasoline pipe-line system built in southeastern states. The main part of the construction work on the line has been completed as originally planned as far north as the Tennessee line, but its operation as a whole is held up by unfinished crossings under some rights-of-way because of opposition by railroad interests, pending passage of enabling legislation.

The line is jointly owned by Gulf Refining Co. and Pure Oil Co. The construction of the entire line was contracted by Williams Brothers Corp. more than a year ago. It is the longest pipe-line project undertaken by one contracting organization in 1940 and it is one of the longest handled in this way in the history of the industry. Construction operations started last January and it was the original intention of the contractor to push the work to an early completion with the use of four gangs. But this was prevented by the numerous legal obstacles presented by railroad interests which made it necessary to carry on the work with a reduced number of crews until the principal construction operations were completed in June. The line, which uses a combination of 8 and 6-in. pipe, represents an expenditure of some $5,000,000.

Gasoline for shipment through the line is transported by tankers from Gulf Coast ports to the company's marine terminal at Port St. Joe, Fla. It is pumped to the terminal at Bainbridge where it is loaded on transport tank trucks for shipment throughout much of the trade territory which the line was built to serve. The operation of this 96-mile section of the line represents important progress in overcoming difficulties which threatened to render this major project useless for an indefinite time. The final solution of the problem confronting Southeastern Pipe Line Co. is being watched with special interest by the industry because two major pipe-line projects, one for gasoline and the other for natural gas, are being planned for construction through southeastern states.

H. C. Price Welds On Three Projects

H. C. Price Co. of Bartlesville, Okla., has been recently awarded contracts for electric welding on the following pipe lines: Southern Natural Gas Co., 10 miles of 8-in. and 14 miles of 12-in. near Selma, Ala. The general contractor is B. & M. Construction Corp., Oklahoma City, Okla. This work has already been completed.

Consumers Power Co., 22 miles of 12-in. running northwest from Midland, Mich. The general contractor is J. C. Dowding, Flint, Mich.

Kaw Pipe Line Co., 22 miles of 8-in. from Gorham, Kans., to Bemis pool. The general contractor is Fredell Construction Co.

Pure Construction Operations Progress at Cumberland, Okla.

In the construction of the 16 miles of 6-in. crude-oil pipe line being laid by B. & M. Construction Corp. for Pure Oil Pipe Line Co. from the Cumberland pool, Oklahoma, to the Armstrong station of Texas Pipe Line Co., 12 miles of pipe have been strung, 11 miles of ditch have been dug, and between 5 and 6 miles of pipe have been welded. On completion of the line, shipments of oil will be tendered to Texas Pipe Line Co. which will transport as a common carrier for delivery at the Pure Oil refinery at Smith's Bluff, Tex.

W. R. Davis & Co. Plans 120-Mile Pipe Line

HOUSTON, Tex.—According to the plans of W. R. Davis & Co. construction will be started soon for a 120-mile 8-in. crude-oil pipe line from Rincon field, Starr County, Texas, to Brownsville. Bids have been received. Plans are for the installation of one pumping station; when it becomes necessary to increase the capacity of the line another station may be added to the line's facilities.

Natural-Gas Pipe-Line Project Is Considered for Colorado

DENVER, Colo.—Consideration is being given to plans to lay a natural-gas pipe line from Piceance Creek, Colo., for a distance of 60 miles to Grand Junction. According to reports Public Service Co. of Colorado has been investigating the situation in a general area which includes the Leadville mining district as well as Grand Valley, where Grand Junction is located. A pipe-line project to serve industries in

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Pipe-Line Personalities . . . . J. K. McGoldrick

J. K. McGOLDRICK

J. K. McGOLDRICK, vice president and assistant manager of Texas Pipe Line Co., and vice president and general manager of Kaw Pipe Line Co., worked in a coal mine in the anthracite area of Pennsylvania at the age of 12. At the age of 14 he became breaker boss and ran the job by speaking in Russian and Polish. After 5 years of this, he went to Ohio and started in the oil fields as line walker on a pipe line and then worked as engineer at a pump station, pumper on a producing lease, and tool dresser on a cable-tool rig.

In 1902, when he was 22, he went to Independence, Kans., and worked for Prairie Pipe Line Co. for 4 years, in the course of which he had a hand in loading the first oil sent out of Oklahoma; this was shipped from Bartlesville by tank car to a pipe-line terminal at Caney, Kans. After a few months' work as pumper and roustabout on producing properties, he started digging ditch for Texas Co. He strapped the first tank and gaged the first oil shipped out of Oklahoma by this organization. He became district foreman in the Nowata-Bartlesville area for the Texas Pipe Line Co. in 1910 and in 1916 he was promoted to the position of superintendent. He has been president of Texas Pipe Line Co. of Oklahoma from 1933 until this corporation was taken over by Texas Pipe Line Co. in 1940. Mr. McGoldrick's activities cover a wide range of operations in Oklahoma, Kansas and Illinois. In addition to being assistant manager of Texas Pipe Line Co. and general manager of Kaw Pipe Line Co., he buys crude oil for Texas Co. and is a director of Texas-Empire Pipe Line Co.

this area might require altogether the laying of more than 150 miles of trunk line. At present Public Service Co. of Colorado operates a manufactured-gas plant in the Grand Valley district. In this general area there are the United States Grand River reclamation project, Gilman Empire Zinc Co.'s Eagle mine, reputed to be one of the largest in the world, and Climax Molybdenum Co.'s mine at Leadville.

Oklahoma-to-Philadelphia Rate For Crude Oil Is Announced

For the movement of crude oil from Glennpool, Okla., to Philadelphia, Pa., a joint pipe-line tariff of 57 cents has been authorized by Interstate Commerce Commission. Gulf Refining Co. is moving oil between these points in connection with Ajax Pipe Line Corp., Keystone Pipe Line Co., National Transit Co., Oklahoma Pipe Line Co., Pure Oil Pipe Line Co., Southern Pipe Line Co., Southwest Pennsylvania Pipe Lines, Eureka Pipe Line Co., Illinois Pipe Line Co., and Tuscarora Oil Co., Ltd. This rate is lower than those recently quoted for tanker shipments of fuel and crude oil from Gulf Coast ports to points north of Hatteras.

Pacific Consolidates Natural-Gas Operations

LOS ANGELES, Calif.—Consolidation has been effected between the Pacific Lighting Corp., southern California gas-utility holding company, and its wholly owned subsidiary, the Industrial Fuel Supply Co., according to announcement by LeRoy M. Edwards, vice president and general manager of Pacific Lighting. Mr. Edwards said the move conformed to Pacific Lighting's policy of simplification of its corporate structure with the object of effecting operating economies.

The Industrial Fuel Supply Co. was incorporated in 1919. The concern operated as a nonutility, wholesale gas-transmission system, which owned and operated natural-gas transmission lines connecting with most of the gas-producing fields in California. It maintained and operated gas compressor stations at strategic points on its system. The main transmission line is a 26-in. line over 200 miles in length, extending from the Kettleman Hills field in the San Joaquin Valley to the city limits of Long Beach.

Principal officers of Pacific Lighting are C. O. Miller, chairman; Robert W. Miller, president; LeRoy M. Edwards, vice president and general manager; Robert A. Hornby, D. G. Volkman and Bernard W. Ford, vice presidents; G. A. Gillan, treasurer, and A. T. Wilson, secretary.

Simrall Corp. Lays Line To Monitor Pool

Simrall Corp. is completing a pipe line from the Monitor pool, Michigan, to a railroad loading rack. For more than 2 years this company has been transporting oil from the pool by truck. A price of $1.10 per barrel for Monitor sweet crude has been posted recently.

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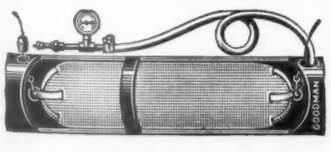

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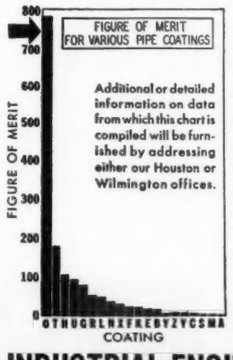

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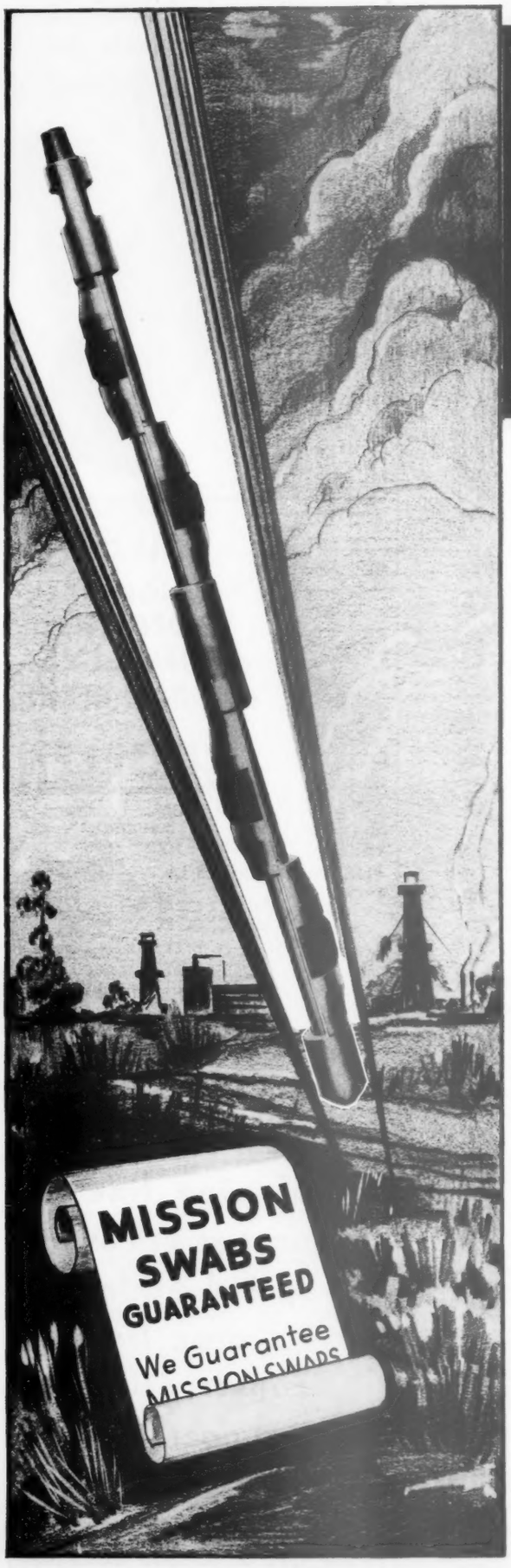

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Let us prove to you on your next swabbing job why we can guarantee that the Mission Valveless Swab is the most economical on the market. Compare its performance and discover a new low in swabbing costs. Mission Swabs are available at your favorite supply store.

MISSION
MANUFACTURING CO.
HUMBLE ROAD, HOUSTON, TEXAS
EXPORT OFFICE: 30 ROCKEFELLER PLAZA, NEW YORK

FIELD DEVELOPMENTS...

HIGHLIGHTS FROM THE WEEK'S NEWS—

Completions reported during the past week were approximately 20 per cent below the level of the balance of December, but this drop was due almost entirely to the holiday season—both on the rigs and in the scouting offices. It cannot be considered as indicative of any trend.

The most significant developments of the year-end included a more active search for gas in the eastern states and Michigan. Here gas is eagerly sought and particularly in Pennsylvania, West Virginia and Ohio wells are drilled to depths of 4,000 or 5,000 ft. in search of gas production that Mid-Continent operators would pass up with scorn. In view of the wastage of gas in Illinois, this search becomes even more noteworthy. The explanation, of course, lies largely in the fact that oil operators rarely recognize the value of gas production and also in the high prices which prevail in the eastern fields. An added factor, which led to the wastage of Illinois' gas, is the fact that the area is a traditional coal area and much opposition was advanced to the introduction of gas.

The most closely watched area today is in Wood County, Texas. There is at present some argument as to whether the producing sand is Woodbine or an underlying sand. Regardless of the age of the producing horizon, the play has possibilities of becoming too active with consequent wild drilling and overproduction.

SOUTHWEST TEXAS: The most closely watched test in the area is the McSpadden well between Lavaca and the Duck Bay field in Calhoun County. Operators are preparing for a test. Agua Dulce and East Premont each received major extensions and a new gas sand is reported in the McFaddin field. The Fagan field in Refugio County has been extended and either a new field or an important extension to the Casa Blanca field, Duval County, was opened up by Magnolia's 1,550-ft. test (p. 68).

TEXAS GULF COAST: Humble's wildcat near La Ward, Jackson County, is drilling ahead below 7,400 ft. after logging several good shows in the Marginulina zone. A second Wilcox pay was discovered in the Sheridan pool (p. 70).

LOUISIANA GULF COAST: A blowout carrying shows of oil at 7,545-55 ft. on the Edgerly dome gives that field its first chance at deep production. Edgerly is one of the oldest fields in southern Louisiana, having been found in 1912. After Humble's second deep well at South Crowley went to water, the well was plugged back and retested in the 5,900-ft. sand and proved a new pay for the field. Ville Platte's Wilcox production was extended a mile to the southwest, adding over 600 acres to the proven area of the field (p. 59).

NORTH CENTRAL TEXAS: While the Fort Worth basin play was getting the publicity, operators in the older districts have been busily developing new production. Two discoveries at the 4,000-ft. level in Wichita County and a 2,900-ft. field near Harrold in Wilbarger County were brought in during the week. A shallow pool discovered in Archer County in a 950-ft. sand has been confirmed by a second well (p. 60).

WEST VIRGINIA: The state's deepest well is drilling below 9,650 ft. in Harrison County (p. 63).

CALIFORNIA: The Eocene discovery south of the Wheeler Ridge field went to water but operators are not satisfied that this is not top water and are retesting. Eocene production in Kettleman Hills will probably be extended by a well now being completed. The new Northeast and Southeast Coalinga fields are developing water trouble, although the source of the water has not been definitely determined. Operators are interested in the possibility of the discovery of a ninth Callender zone in the Dominguez field (p. 56).

EAST TEXAS: The third well in the Hawkins area of Wood County, between the discovery and Rotondi's test is reported running about 167 ft. above the discovery and 200 ft. below the Rotondi well. The original discovery is pumping 128 bbl. of oil and the water is thought to be running about 35 per cent. Successful development of Hawkins is leading to prospecting of other possible Woodbine areas, including the Keechi dome in Anderson County and the Winona and Salt Flat areas of Smith County. The East Texas area is one of the hottest in the country at this time (p. 59).

WEST TEXAS: One of Amon Carter's deep tests in the Wasson pool has picked up a new pay between 6,210 and 6,685 ft., and the other is drilling at 9,200 ft. with several shows reported below the 6,800-ft. level. The position of the new pay is not known except that it is below the Holt pay of Ector County. It may correlate with the Tubb pay of Crane. Results in these wells may have a far-reaching effect in development not only of the Wasson pool but also of the large Slaughter area to the north (p. 65).

COMPLETIONS IN ALL FIELDS . . .

(Week ended December 28, 1940)

	Oil	Gas	Dry	Total	1940 total comp. to date	1939 total comp. to date
N. Y., Pa., and W. Va.	66	19	4	89	5,850	3,612
Ohio	8	18	9	35	1,244	906
Indiana	3	3	7	13	502	361
Kentucky	3	4	7	14	540	713
Illinois	34	0	12	46	3,751	3,635
Michigan	4	0	8	12	1,139	1,480
Kansas	20	1	11	32	1,764	1,380
Oklahoma	9	1	4	14	1,746	1,740
Texas:						
North Central Texas	23	0	10	33	2,814	2,510
West Texas	18	0	4	22	1,789	1,863
Texas Panhandle	6	0	1	7	568	456
Eastern Texas	0	1	2	3	627	691
Texas Gulf Coast	11	0	1	12	1,207	1,358
Southwest Texas	18	0	4	22	2,050	2,440
Total Texas	76	1	22	99	9,055	9,318
North Louisiana	3	0	0	3	667	533
Louisiana Gulf Coast	11	0	9	20	1,012	763
Total Louisiana	14	0	9	23	1,679	1,296
Montana	4	0	0	4	237	174
Wyoming	1	0	0	1	163	145
Colorado	0	0	0	0	18	20
New Mexico	3	0	1	4	525	571
California	25	0	0	25	1,009	932
Miscellaneous	1	0	1	2	234	68
Total United States	274	47	95	416	29,639	26,597
Total previous week	335	60	124	519		
Week ended Dec. 30, 1939	381	43	129	553		

KANSAS: A new Arbuckle pool is in prospect near the town of Seward in Stafford County. Gorham sand production was found 1¾ miles northeast of the Davidson pool in Russell County and Canton North was extended 1 mile north (p. 61).

MISSISSIPPI: With more than half of the reporting tests in the district shut down, drilling activity is at a low ebb. Geophysical work is continuing actively (p. 75).

LA-ARK-TEX: A new Paluxy gas zone was opened up east of Shelbyville, Shelby County, Texas. The Wilcox play extending across Central Louisiana has resulted in nine locations on which work will commence shortly after the start of the new year (p. 66).

OHIO: The Clinton sand play which moved south from northeastern Ohio received very scanty encouragement as a small well was brought in in Tuscarawas County (p. 64).

MICHIGAN: While oil production has fallen off one-third since January, discoveries in Clare, Missaukee and Osceola counties promise that 1941 will have greater gas production than the past record-breaking year (p. 75).

ILLINOIS: Activity was greatly reduced at the year's end and prospects are that this diminution will continue (p. 71).

NEBRASKA: With 29 completions, the Falls City pool is encountering water troubles. The intrusion is apparently coming from the west (p. 62).

By
L. P. STOCKMAN

South Wheeler Ridge Eocene Show to Be Retested

LOS ANGELES, Calif., Dec. 30. — Two successively mild winter periods, substantial inroads into gas consumption by fuel oil due to low prices of the latter, and flush production of natural gas from prolific fields undergoing development has had a tendency to restrict drilling operations in gas fields and in areas where potential gas fields might be expected. At present, work in gas areas is limited to three wells of which Standard Oil Co. is drilling two and Richfield Oil Corp. one. Standard's projects are 1 Blewett Community in San Joaquin County and 1 Tippette Two in Yolo County, both in the north central part of the state. Richfield's operation is in Solano County where 3 Potrero Hills is being drilled into a known gas zone. Richfield appears to have discovered a probable commercial dry gas field in this district but the first two wells did not show a production sufficiently large enough to remove all doubt and consequently the Potrero Hills gas field is on probation pending future developments. It is believed that the present well, the third to be drilled on the structure, will indicate the importance of the accumulation. There have been no large gas fields discovered for the past several years due in part to restricted exploration work.

Wheeler Ridge

Immediately south of the Wheeler Ridge field of Kern County in the extreme southern end of the San Joaquin Basin, Richfield Oil Corp. has stopped making hole at 11,008 ft. and will plug back to make another water-shutoff test on the shoe of the 6⅝-in. water string cemented at 10,862 ft. This well, which cored 64 ft. of Eocene oil sand below the shoe of the water string, tested wet on a production test about 2 weeks ago. Previously a satisfactory water shutoff had been secured on the 6⅝-in. casing and so, in view of this condition, it was assumed that the formation was wet. The test resulted in a production of about 1,000 bbl. of salt water and the company accordingly resumed drilling operations. When a depth of 11,008 ft. was reached, the company's geological department was not convinced entirely that the salt water was formation water. The possibility existed that the salt water which entered the hole might be coming from around the shoe of the 6⅝-in. casing and accordingly it was decided to make a conclusive test before proceeding further. This is the second wildcat drilled by Richfield in the area a mile or so south of the old Wheeler Ridge field and both wells have shown production possibilities although to date only a few hundred barrels of oil has been recovered in the district to date. The first well was brought in flowing a small quantity of crude oil but died within a short time and the company installed pumping equipment. This well was unsatisfactory due to low fluid level and water content and work was suspended after an extended attempt to secure commercial production. The present wildcat was started within a comparatively short time after suspension of work on the initial well.

Kettleman North Dome

R. S. Lytle is expected to extend the productive limits of the Eocene in the Kettleman North Dome field in the not far distant future as 5 Felix in 35-21s-17e is in the pay and has 6⅝-in. casing cemented at 10,546 ft. This well is located rather far out on the north flank of the Kettleman structure although within the confines of Temblor production. The Felix property is fee acreage and its operation is not included in operation of the Kettleman North Dome Association which was organized immediately subsequent to discovery of the field to unify drilling and production activities. A large portion of the Felix property is within the original blue and red lines established at the inception of the association by a group of engineers. Four wells have been completed in the Temblor and 5 Felix should be ready for a production test in the Eocene shortly. If this well shows substantial production in the Eocene, it is quite likely that Tide Water Oil Co. will drill an Eocene well on its Whepley lease nearby and Shell will possibly also start an Eocene well on its Dixon lease where Temblor production has declined to the vanishing point.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: San Joaquin Valley	11	13,185	98,744
Coastal district	4	2,423	31,215
Los Angeles Basin	10	6,142	40,379
Total	25	21,750	170,338

AVERAGE DAILY PRODUCTION

LEADING CALIFORNIA FIELDS

	Dec. 28	Dec. 21
Wilmington	80,470	82,950
Midway-Sunset	52,650	54,425
Long Beach	41,425	41,750
Kettleman North Dome	38,660	38,800
Coalinga	33,400	38,150
Ventura Avenue	32,650	33,525
Huntington Beach	26,825	26,400
Santa Fe Springs	25,025	25,150
Dominguez	19,575	21,250
Santa Maria Valley	19,550	18,750
Montebello	15,750	15,800

Coalinga

Amerada Petroleum Corp. has apparently found the outer limits of production in the Northeast Coalinga field of Fresno County as 37-17-B Southern Pacific land in 17-19s-16e flowed salt water from the Gatchell sand and has been shut in. This well was drilled to 9,511 ft. as a deep test and upon failing to find anything worth testing backed up to 8,339 ft. and landed a blank string of 5½-in. casing. Top of the Cretaceous in which the well was bottomed was logged at 9,420 ft. The 5½-in. was perforated at various intervals and in each case the well failed to show commercial production. With the hole cleaned out to 8,275 ft. the company gun-perforated at 8,130-32 ft. with four shots and with the formation packer at 8,101 ft. and open 1 hour the well showed a production of 15 ft. of mud. With perforations at 8,247-51 ft. a recovery of salt water testing 3,434 grains was effected. The perforations were subjected to a squeeze job with 42 sacks of cement and when this failed to shut off water a recement job was effected. The interval at 8,239-43 ft. was then shot and with 2½-in. tubing hung at 8,212 ft. the well flowed 90 bbl. in 4 hours. Production tested 26.7 gravity and showed a cut of 0.7 per cent but in spite of this the well went to water within a comparatively short time. This interval was then squeezed with 60 sacks of cement and 43 were put away. The interval at 8,270-72 ft. proved wet and the four holes were squeezed with five sacks of cement. Eight ½-in. holes were then shot at 8,243-47 ft. atfer the hole had been cleaned out to 8,282 ft. but this section of the hole like the others tested showed a small amount of salt water. Water trouble appears to be developing at several points in the Northeast and Southeast Coalinga fields but it is too early to determine definitely whether this is due to mechanical trouble or bottom water or edge water.

SAN JOAQUIN VALLEY COMPLETIONS

Belridge North Field

Belridge Oil Co. 1-2 fee 2-28s-20e
Flowed 370 bbl., 32.4-gravity, 20 per cent cut, 10,900,000 cu. ft. gas, 96/64-in. bean. Pressures 430/65 lb., with 9/64-in. bean 1,600/1,700 lb. Elev 639 ft. T.D. 8,262 ft in Wagon Wheel zone (Eocene). 9-in. 7,970 ft. 322 ft. 4¾-in. liner 8,262 ft. 250-mesh perf. 7,979-8,262 ft. 8,244 ft. 2½-in. tubing. 52 days' drilling time. Kern County.

Coalinga Northeast Field

Bandini Pet. Co. 61-30-B Coalinga 30-19s-16e
Flowed 876 bbl., 27.7-gravity, 0.2 per cent cut, 342,000 cu. ft. gas. 23/64-in. bean. Pressures 1,050/1,175 lb. Elev. 627 ft. T.D. 8,225 ft. in Gatchell zone. 7-in. 8,152 ft. 116 ft. 5½-in. liner 8,223 ft. 100-mesh perf. 8,193-8,223 ft. 8,191 ft. 2½-in. tubing. Top Kreyenhagen 6,930 ft., green sand 8,053 ft. Gatchell 8,172 ft. 53 days' drilling time. Fresno County.

Standard 58-19-B fee 19-19s-16e
Flowed 2,611 bbl., 26.1-gravity, 0.1 per cent cut, 702,000 cu. ft. gas. 48/64-in. bean. Pressure 500/2,910 lb. Elev. 647 ft. T.D. 8,267 ft. in Gatchell. 7-in. 8,070 ft. 283 ft. 5-in. liner 8,265 ft. 60-mesh perf. 8,225-65 ft., also gun perf. 10 holes 8,120-30 ft. 8,183 ft. 2¼-in. tubing with packer 8,179 ft. and choke 8,180 ft. Top green sand 7,877 ft., Gatchell zone 8,077 ft. 91 days' drilling time. Fresno County.

Union 77-18 Cook 18-19s-16e
Flowed 982 bbl., 27.2-gravity, 0.2 per cent cut, 355,000 cu. ft. gas. 18/64-in. bean. Pressures 1,125/1,150 lb. Elev. 565 ft. T.D. 8,220 ft. in Gatchell. 5½-in. 7,868 ft. 407 ft. 4-in. liner 8,216 ft. Perf. 8,184-8,216 ft. 8,184 ft. 2-in. tubing. Top Kreyenhagen 6,744 ft., green sand 7,762 ft., Gatchell zone 7,885 ft. 61 days' drilling time. Fresno County.

Coalinga Southeast Field

R. S. Lytle 86-18-F 18-20s-16e
Flowed 2,194 bbl., 29.4-gravity, 0.1 per cent cut, 1,190,000 cu. ft. gas, 30/64-in. bean. Pressures 890/1,120 lb. Elev. 754 ft. T.D. 8,015 ft. in Gatchell. 8⅝-in. 7,685 ft. 355 ft. 6⅝-in. liner 8,015 ft. 100-mesh perf. 7,739-8,015 ft. 7,944 ft. 2½-in. tubing. Top Kreyenhagen 6,453 ft., grit zone 7,595 ft., Gatchell zone 7,717 ft. 48 days' drilling time. Fresno County.

Coles Levee Field

Richfield 34-4-B Kern County Land 4-31s-25e
Flowed 410 bbl., 38.8-gravity, 2.4 per cent cut, 2,000,000 cu. ft. gas. Two 1½-in. beans. Pressures 250/500 lb. Elev. 306 ft. T.D. 9,585 ft. in Stevens. 8⅝-in. 8,708 ft. 898 ft. 6⅝-in. liner 9,580 ft. Perf. 8,822-8,933 ft., 8,971-9,044 ft., 9,085-9,255 ft., 9,310-9,580 ft. 9,557 ft. 2½-in. tubing. N point 8,527 ft. Top Stevens oil sand 8,605 ft. 63 days' drilling time. Kern County.

Richfield 72-4-B Kern County Land 4-31s-25e
Flowed 775 bbl., 36.3-gravity, 4 per cent cut, 2,500,000 cu. ft. gas. Two 1½-in. beans. Pressures 150/750 lb. Elev. 307 ft. T.D. 9,750 ft. in Stevens. 7-in. 9,350 ft. 438 ft. 5¾-in. liner 9,742 ft. Perf. 9,366-9,592 ft., 9,633-9,742 ft., 9,716 ft. 2½-in. tubing. N point 9,013 ft. Top Stevens 9,320 ft. 80 days' drilling time. Kern County.

Edison Field

Wood-Callahan Oil Co. 1 McGoffin 21-30s-29e
Pumped 100 bbl., 18.5-gravity, 1 per cent cut. Elev. 210 ft. T.D. 3,640 ft. in Kern River Series. 8⅝-in. 2,950 ft., 828 ft. 4¾-in. liner 3,639 ft. Perf. 3,455-3,639 ft., 2,800 ft. 2½-in. tubing. Deepened from 3,200 ft. Originally completed in May 1936 and produced until recently. Kern County.

Kettleman North Dome Field

Kenda 26-18-Q 18-22s-18e
Flowed 1,058 bbl., 37.7-gravity, 1.3 per cent cut, 501,000 cu. ft. gas. 128/64-in. bean. Pressures 180/840 lb. Elev. 1,197 ft. T.D. 7,560 ft. in Temblor. 6⅝-in. 7,324 ft. 266 ft. 4¾-in. liner 7,555 ft. Perf. 7,355-7,555 ft., 6,518 ft. 2½-in. tubing. Top brown shale 5,310 ft. 47 days' drilling time. Kings County.

Standard 311-33-J fee 33-21s-17e
Flowed 221 bbl., 48.1-gravity, 2 per cent cut, 11,600,000 cu. ft. gas. 24/64-in. bean. Pressures 2,800/3,100 lb. Elev. 895 ft. T.D. 10,125 ft. in Avenal. 6⅝-in. 9,773 ft. 932 ft. 4¾-in. liner 10,120 ft. Perf. 9,805-10,120 ft. 117 days' drilling time. Fresno County.

Rio Bravo Field

Superior 4 Fink 27-28s-25e
Flowed 1,576 bbl., 39.1-gravity, 0.3 per cent. 1,972,000 cu. ft. gas. 48/64-in. bean. Pressures 1,500/1,500 lb. Elev. 339 ft. T.D. 11,460 ft. in Vedder. 7⅝-in. 11,387 ft. 90 ft. 5¾-in. liner 11,460 ft. 120-mesh perf. 11,390-11,460 ft. 11,072 ft. 2½-in. tubing. Top Rio Bravo zone 11,387 ft. 47 days' drilling time. Kern County.

Tupman Field

Richfield 47-28-A Kern County Land 28-30s-25e
Flowed 2,112 bbl., 32.2-gravity, 5 per cent cut, 2,900,000 cu. ft. gas. Two 1½-in. beans. Pressures 700/800 lb. Elev. 314 ft. T.D. 9,275 ft. 8⅝-in. 8,645 ft. 656 ft. 6⅝-in. liner 9,267 ft. Perf. 8,656-8,844 ft., 8,887-9,165 ft., 9,149-9,265 ft. 9,241 ft. 2½-in. tubing. N point 8,110 ft. Top upper Stevens oil sand 8,320 ft. 47 days' drilling time. Kern County.

SAN JOAQUIN VALLEY OUTPOSTS

Coles Levee Field

Standard 20-8 Kern County Land 5-31s-25e
Drilling 8,998 ft. in sandy shale. Kern County.

Union 58-2 Kern County Land 2-31s-25e
Drilling 6,964 ft. in sandy shale. Kern County.

Elk Hills Field

Standard 42-31-S 31-30s-24e
Drilling 5,994 ft. in sand and shale. Kern County.

Midway-Sunset Field

No. Amer. Oil Consd. 1-28 W.P. 28-32s-23e
Drilling ahead 4,161 ft. Kern County.

Paloma Field

Western Gulf 12-12-B Kern County Land 12-32s-26e
Drilling sandy shale 9,897 ft. Kern County.

Kettleman North Dome Field

Standard 344-13-H fee 13-21s-16e
Drilling oil sand 10,873 ft. Preparing to complete in Eocene. Fresno County.

Standard 1-1-U fee 1-23s-16e
Drilling hard gray shale 10,541 ft. Kings County.

Rio Bravo Field

Union 41-33 Pacific States 33-28s-25e
Drilling 9,476 ft., sandy shale. Kern County.

Strand Field

Associated 25-7-E Kern County Land 7-30s-26e
Drilling 11,060 ft. in hard sand and shale. Kern County.

Wheeler Ridge Field

Richfield 2 Kern County Land 28-11n-20w
T.D. 11,060 ft. Production test showed salt water. Kern County.

SAN JOAQUIN VALLEY WILDCATS

Panoche District

Jergins Trust 2 Cheney 29-14s-13e
Drilling 7,030 ft. in Moreno shale. Formation test 6,770-6,825 ft. open 40 minutes recovered two stands mud, no oil but puff of gas. Will make another formation test at present depth at once. Fresno County.

Buena Vista Hills District

Honolulu 25-P fee 10-32s-24e
T.D. 11,145 ft., milling on iron. Kern County.

Potrero Hills District

Richfield 3 Potrero 10-4n-1w
Drilling 2,798 ft. Solano County.

Rio Bravo District

Wilshire 1 Campen 1-29s-25e
Drilling 10,661 ft. in sandy shale. Kern County.

Rumsey Hills District

Standard 1 Tippetts 9-12n-3w
Drilling 3,252 ft., in sandy shale. Formation test 3,069-3,140 ft. recovered mud. Yolo County.

Sacramento District

Ind. Expl. Co. 1 Unit Plan 19-7n-6e
T.D. 4,812 ft. in basement. Top basement 4,806 ft. Will make formation tests of gas shows at 2,400-2,600 ft. and 4,780-4,806 ft. Sacramento County.

Tejon District

Richfield 1 Tejon Ranch 2-10s-19e
Drilling ahead 9,480 ft. Kern County.

Union Avenue District

Hancock Oil Co. 1 Roberts 6-30s-28e
Drilling 5,030 ft. in Chanac oil sand and shale. Good-looking oil sand 4,965-95 ft. Kern County.

Tracy District

Standard 1 Blewett 25-3s-6e
Drilling 3,573 ft. San Joaquin County.

LOS ANGELES BASIN

The Wilmington field of Los Angeles Basin now has more than 900 wells. It produced 107,143,415 bbl. of crude oil up to the close of November and better than 109,000,000 bbl. from date of discovery to the end of 1940; it still has its best production ahead. The 904 wells now producing in the Wilmington were finished in the Ranger, upper Terminal, lower Terminal, and the Ford zone located west of the Ford plant. This means that the Wilmington field will have at least 1,100 wells by the time Ford zone development in the east end of the field is completed. This field is separated into five separate producing blocks all of which are sealed against migration of oil and gas. The westerly four blocks have been almost completely developed but the eastern block contains what is regarded as a highly productive oil sand in the Ford zone that has been held back until a more opportune time. One well has been drilled down into the Ford zone in the eastern end of the field and while it was not allowed to remain on production it showed enough during its short life to indicate the existence of a highly prolific zone. There are at present 15 wells drilling in this field and a number of additional locations staked and since there is no change evident in the policy of restricting development of the Ford zone these wells will be completed in other zones. Superior Oil Co. which drilled a dry hole on Mormon Island adjacent to production in the Wilmington field early this year has quitclaimed its leases back to the Los Angeles Harbor Department.

Dominguez—Rosecrans

The west end of the Dominguez field of Los Angeles Basin is getting hot again due to a report that Union Oil Co. has found about 50 ft. of oil sand in 79 Callender which the company is carrying down as a deep conclusive test. Union has made no announcement of any discovery and has not made a formation test so the basis of this report remains to be determined. Late this week Union was drilling ahead in 79 Callender at 11,220 ft. If later developments show that Union has found a ninth Callender zone at Dominguez, it is quite likely that Seaport 1 Dasteel will be deepened as it failed to find commercial production in the upper zones. The Wood-Mellon outpost would probably also be deepened in the hope of intercepting the dipping oil zone. Up in the Athens section of the Rosecrans field where deeper production was found several months ago, Rankin & Williams are drilling ahead in search of the new productive horizon but still have some distance to go yet before reaching the objective. The Zinns zone was barren at 7,250 ft. in this deep test.

LOS ANGELES BASIN COMPLETIONS

Huntington Beach Field

Harold Morton Co. 1 Huntington 34-5s-11w
Pumped 90 bbl., 25.2-gravity, 2 per cent cut, elev. 75 ft., T.D. 4,608 ft. in Bolsa zone, 6⅝-in. 4,608 ft., perf. 4,450-4,550 ft., 3,810 ft. 2½-in. tubing, 39 days' drilling time. Orange County.

Signal O. & G. Co. 12 Bolsa 34-5s-11w
Flowed 875 bbl., 29.1-gravity, 0.2 per cent cut, 200,000 cu. ft. gas, elev. 14 ft., T.D. 3,303 ft., 8⅝-in. 2,771 ft., 557 ft. 6⅝-in. liner 3,298 ft., perf. 2,766-3,298 ft., 12 days' drilling time. Orange County.

Inglewood Field

Standard 1-86 L.A.I. 8-2s-14w
Flowed 1,690 bbl., 30.8-gravity, 1.2 per cent cut, 1,350,000 cu. ft. gas, 1-in. bean, pressures 150/400 lb., elev. 248 ft., T.D. 4,050 ft. in Repetto zone, 9-in. 3,428 ft., 662 ft. 6⅝-in. liner 4,048 ft., perf. 3,532-99 ft., 3,640-3,883 ft., 3,924-4,048 ft.; 3,992 ft. 2½-in. tubing, 51 days' drilling time. This is best completion in Inglewood field in more than a decade. Los Angeles County.

K. & I. Corp. 26 Rubel 8-2s-14w
Flowed 880 bbl., 30.7-gravity, 1.5 per cent cut, 600,000 cu. ft. gas, 2-in. bean, pressures 50/150 lb., elev. 244 ft., T.D. 3,855 ft. in Rindge zone, 8⅝-in. 3,344 ft., 534 ft. 6⅝-in. liner 3,854 ft., perf. 3,349-3,854 ft., 3,817 ft. 2½-in. tubing, 41 days' drilling time. Los Angeles County.

Long Beach Field

Taylor & Asso. 1 Signal 19-4s-12w
Pumped 75 bbl., 19.6-gravity, 6 per cent cut, elev. 90 ft., T.D. 4,720 ft. in Bixby-Alamitos sand, 7-in. 3,941 ft., 822 ft. 5-in. liner 4,720 ft., perf. 3,931-4,720 ft., 40 days' drilling time. Los Angeles County.

Wilmington Field

Jergins Trust 8 Wilmington 33-4s-13w
Pumped 102 bbl., 19.4-gravity, 3 per cent cut, elev. 13 ft., T.D. 3,450 ft. in Ranger zone, redrilled to 3,325 ft., 10¾-in. 3,023 ft., 333 ft. 5¾-in. liner 3,325 ft., 60-mesh perf. 3,014-3,324 ft., 3,310 ft. 2½-in. tubing. Originally completed in July 1937. Los Angeles County.

Morse, C. M., 1 Avalon 29-4s-13w
Flowed 170 bbl., 15.6-gravity, 5 per cent cut, 18,000 cu. ft. gas, 62/64-in. bean, pressures 75 lb., elev. 54 ft., T.D. 3,730 ft. in Ranger zone, 8⅝-in. 3,040 ft., 717 ft. 5¾-in. gravel-packed liner 3,730 ft., perf. 3,040-3,225 ft., 3,294-3,730 ft.; 3,717 ft. 2½-in. tubing, with packer 3,020 ft., 25 days' drilling time. Los Angeles County.

Sonwell Oil Co. 1 Harbor 32-4s-13w
Pumped 215 bbl., 13.7-gravity, 12 per cent cut, elev. 33 ft., T.D. 3,625 ft. in Ranger zone, redrilled to 3,586 ft., 10¾-in. 2,635 ft., 1,010 ft. 5½-in. gravel-packed liner 3,585 ft., perf. 2,640-2,835 ft., 2,925-3,095 ft., 3,235-3,585 ft.; 3560 ft. 2½-in. tubing. Los Angeles County.

Union Pacific R. R. 163 fee 33-4s-13w
Flowed 275 bbl., 29.2-gravity, 2.5 per cent cut, 75,000 cu. ft. gas, 48/64-in. bean, pressures 170/170 lb., elev. 15 ft., T.D. 5,500 ft. in Ford zone, 10¾-in. 2,628 ft., 2,642 ft. 7-in. blank liner 5,064 ft., 458 ft. 4¾-in. liner 5,494 ft., perf. 5,061-5,163 ft., 5,290-5,352 ft., 5,450-94 ft.; 5,019 ft. 2½-in. tubing. Ranger, upper Terminal and lower Terminal zones blanked off with blank liner, 50 days' drilling time. Los Angeles County.

Union Pacific R. R. 29-E 3-5s-13w
Flowed 440 bbl., 30.4-gravity, 1.2 per cent cut, 75,000 cu. ft. gas, 42/64-in. bean, pressures 420/950 lb., elev. 15 ft., T.D. 3,962 ft., P.B. 3,750 ft. in upper Terminal zone, 10¾-in. 2,509 ft., 1,072 ft. 7-in. blank liner 3,416 ft., 562 ft. 4¾-in. liner 3,955 ft., 3,623 ft., 3,786 ft.; perf. 3,416-3,509 ft., 3,524-74 ft., 3,625-3705 ft., 3,788-3,848 ft., 3,861-3,955 ft.; 3,593 ft. 2½-in. tubing, set bridge plug 3,750 ft. to blank off gas zone, 86 days' drilling time. Los Angeles County.

Union Pacific R. R. 31-E 3-5s-13w
Flowed 1,267 bbl., 23.3-gravity, 0.2 per cent cut, 5,000 cu. ft. gas, 48/64-in. bean, pressures 350/890 lb., elev. 15 ft., T.D. 2,939 ft. in Ranger zone, 7-in. 2,683 ft., 357 ft. 4-in. gravel-packed liner 2,936 ft., perf. 2,582-83 ft., 2,603-61 ft., 2,681-2,936 ft., 2,571 ft. 2½-in. tubing, 21 days' drilling time. Los Angeles County.

Wilton Oil Co. 9 Harbor Comm. 29-4s-13w
Pumped 365 bbl., 16.5-gravity, 2 per cent cut, elev. 48 ft., T.D. 3,712 ft. in Ranger zone, 8⅝-in. 3,045 ft., 698 ft. 5¾-in. liner 3,712 ft., perf. 3,000-45 ft., 3,420-3,712 ft., 3,700 ft. 2½-in. tubing, 19 days' drilling time. Los Angeles County.

LOS ANGELES BASIN OUTPOSTS

Dominguez Field

Union 79 Callender 32-3s-13w
Drilling 11,297 ft. Los Angeles County.

Long Beach Field

Union 19 L.B.C. 30-4s-12w
Drilling in sand and shale at 9,763 ft. Los Angeles County.

LOS ANGELES BASIN WILDCATS

Dominguez-Gardena District

Wood-Mellon 1 Wood 31-3s-13w
T.D. 7,795 ft., P.B. 2,400 ft. Redrilled 6,975 ft. Swabbing water with trace of oil. Los Angeles County.

Inglewood District

Standard 3-1 L.A.I. 17-2s-14w
T.D. 8,603 ft. Fishing core barrel in hard Miocene sandy shale. Formation test 8,524-91 ft. open 42 minutes recovered 5,000,000 cu. ft. gas, 100 ft. mud and condensates. Los Angeles County.

Pico District

Cal-Pico 1 Pico 7-2s-11w
T.D. 7,787 ft. in gray sand and shale, P.B. 6,000 ft. May P.B. farther and test showing around 5,900 ft. Los Angeles County.

Whittier District

Fullerton 6 Whittier 25-2s-11w
T.D. 6,006 ft., P.B. 2,940 ft. Flowing by heads from 2,940 ft. at rate of 20 bbl. daily, 16.3-gravity, cut 15 per cent. Los Angeles County.

COASTAL DISTRICT

Completion early this week of Lloyd Corp. 5 Lloyd climaxed a long period of drilling but the initial production of this well partially compensates for the extended period of work as it appears good for a potential of about 1,500 bbl. per day. It took 262 days to drill and complete this well, which is located in the extreme eastern end of the Ventura Avenue field, but its relatively large production entirely justifies the belief that commercial production could be expected out on the east end of the structure. Shell Oil Co. drilled a well on this property a couple of years ago but quitclaimed the remainder of the property when its first well proved to be very small. Tide Water Associated Oil Co. later took a try at the property but after failing to develop large production it too pulled out. Ralph Lloyd then began work and completion of three good wells has vindicated his belief. Another well, 6 Lloyd, is now being drilled. No. 5 was drilled to 10,475 ft. as a deep test but when the bottom of the hole proved wet it was plugged back to 8,840 ft. and completed at this depth. The extreme limits of production remain to be determined in the east end of the Ventura Avenue field, although developments indicate it is not very far removed from present drilling. The west end of the structure is still wide open and may yet be found to be connected with the San Miguelito field.

Newhall—Castaic

Tide Water Associated Oil Co. had the good fortune to complete successfully 16 Porter in the Aliso Canyon field last week and finished a good well, but the recent rains loosened the soil higher up on the hill and when a landslide developed the derrick and other surface equipment went with it. The well and its fittings, however, remained intact and were undamaged. This field is located in a hilly area with rough topography and requires extensive roads. Early in 1941 Tide Water Associated will lay a 5-mile pipe line from its properties in Aliso Canyon to make connections with General Petroleum's main trunk which terminates at Los Angeles Harbor. The latter will transport Associated's production to its Wilmington refinery. The new line will have a diameter of 8-in. and will not entail any unusual problems. It will cost about $150,000, including other necessary equipment and storage tanks with a capacity of 100,000 bbl., and the erection of an electrical pumping station necessary to buck the line pressure maintained by General Petroleum. To date, Tide Water Associated Oil Co. has been moving current production by trucks and trailers. A total of 12 wells have been completed in the Aliso Canyon field by Tide Water since its discovery. All productive acreage is held exclusively by Tide Water Associated Oil Co.

In the Del Valle field discovered a few months ago by R. E. Havenstrite, a string of 8⅝-in. casing has been cemented in 2 Lincoln at 6,037 ft. with 600 sacks of cement. Top of the Miocene was logged at 5,706 ft. and it is the present intention to test out some upper showings found but not tested in the discovery well. No. 2 is south of 1 Lincoln, the discovery well, and is lower structurally in order to get outside the high-pressure gas-cap area which was found in the first well. F. S. Jasper, of Long Beach, has acquired 360 acres in 13-4n-18w and also in Sections 17 and 18 in 4n-17w, but no immediate work is contemplated. In accordance with provisions of the lease actual drilling must be under way before April 4, 1941. The acreage involved is checkerboarded with holdings of Bankline Oil Co., Standard Oil Co., Kern Oil Co., Ltd., Superior Oil Co., Ohio Oil Co. and Pacific Western Oil Co. If the first well is drilled on the Videgan property as contemplated at present the location will be about 1½ miles west of the discovery well on the Del Valle anticline. Up in Oak Canyon, Western Gulf Oil Co. is preparing to begin actual drilling operations but work may be held up for another week due to inclement weather. This wildcat will be drilled on the Lechler lease in 31-5n-17w. A number of other wildcats are scheduled to be drilled in this area early in 1941.

COASTAL DISTRICT COMPLETIONS

Aliso Canyon Field

Associated 16 Porter 27-3n-16w
Flowed 456 bbl., 22.8-gravity, 6 per cent cut, 48/64-in. bean, pressures 435/590 lb., elev. 2,615 ft., T.D. 5,815 ft., 6⅝-in. 5,370 ft., 535 ft. 6⅝-in. liner 5,815 ft., 80-mesh perf. 5,311-5,815 ft., 5,415 ft. 2½ and 3-in. tubing, 101 days' drilling time. Los Angeles County.

San Miguelito Field

Continental 4 Grubb 23-3n-24w
Flowed 484 bbl., 31.1-gravity, 0.2 per cent cut, 530,000 cu. ft. gas, 1¼-in. bean, pressures 100/540 lb., elev. 7.6 ft., T.D. 7,315 ft., 7-in. 6,720 ft., 655 ft. 4¾-

(Continued on Page 70)

OKLAHOMA FIELD REPORT

By

ROBERT INGRAM

Laffoon Gas Pool in Lincoln Co. Becoming More Active

LEASES in Caddo County were in demand again this week and activity was on the increase in the Laffoon extension area of Lincoln County where production of both oil and gas was found in the Hunton lime.

Original production in the Laffoon pool was a heavy black oil from the Wilcox, but the Hunton lime has yielded commercial gas. Kerlyn Oil has staked 1 Lynde, NW NE 15-13-6, and is preparing to start work. The same company was rigging up 1 Tipton, NW NW NW 15-13-6, and 1 Froug-Smulline, SE NW NW 2-13-6, was drilling below 3,767 ft.

Harper & Turner et al 1 School Land, E½ SE NW 16-13-6, was also rigging up and due to spud this week.

SUMMARY OF COMPLETIONS

	No.	Bbbl.	Footage
Oil wells: Dill	1	180	3,591
Other fields	9	1,098	35,064
Gas wells: Fields	1	*0.8	2,600
Dry holes: Dill	1	.....	3,871
Other fields	3	.....	9,855
Wildcats	1	.....	4,518
Total	16	.....	59,499
Recompletions	1	25	.....

*Million cu. ft.

Caddo County Activity Increasing

Land men who have been active in Caddo County spent most of the holiday season mopping up and getting requirements on recent purchases. Atlantic Refining Co. paid more than $100 per acre for wildcat acreage north of Fort Cobb held by the state.

The company bid $4,000.40 for the NE NE Section 13; $8,000.80 for the E½ SW Section 13, and $8,260 for the W½ SW Section 13, a total of $20,261.20 for the 200 acres.

Attention was focused on the area December 9 when the Kiowa Indian Agency at Anadarko sold 73 tracts, aggregating more than 10,000 acres, at an average price of $9.10 an acre.

The Texas Co. announced location for another deep test in C SW NW 2-5-12w, in Caddo County, a half mile southwest of its 1 Smith which was completed in November for 3,000,000 cu. ft. of gas with some salt water. It drilled into a faulted zone, getting the Viola lime twice, and Texaco geologists believe the new test will hit the upthrow side of the fault.

Others taking up leases in Caddo County were Phillips Petroleum Co., Carl O'Harnett and J. Hiram Tandy. Amerada also took 5-year leases on the NW SE and NE SE 33-6-10w, west of Cement.

Hobart Field

In the Hobart field of Kiowa County, Shell Oil Co., Inc., added another producer on the west side in 4 Ratliff, NE SE NE 19-7-17w. Casing was set at 965 ft. and later cemented to kill an estimated 5,000,000 cu. ft. of gas from the shallow zone, then drilled deeper. An estimated 2,000,000 cu. ft. of gas was found in the field's regular pay zone from 1,014-15 ft., with the first spray of oil at 1,025 ft. Drilling was halted at 1,060 ft. in the Sylvan shale to run pipe and at the time the flow was estimated at 5,000,000 cu. ft. of gas with 5 bbl. of oil an hour.

Okfuskee County continued active where J. R. Higgins et al 1 Miller, NW NE SW 35-12-8, showed slight chance of commercial production and apparently marked the north flank of the Dill pool, but the I.T.I.O. 3 Miller, NE NW SW 35-12-8, which is offsetting this well, was showing for a good producer. Fifty-two feet of sand in the Cromwell from 3,514-66 ft. showed good saturation. Meantime Higgins staked location for a south offset to their 1 Miller in SW NE SW 35-12-8.

Oil-stained Wilcox sand was found by the Shell Oil Co., Inc., in its Okfuskee County wildcat, 1 Davis, SW SW SW 18-13-9, and the operator was running 4½-in. casing to test.

OKLAHOMA COMPLETIONS

Creek County

Olive pool: Reese 3 Berryman, SW SW 36-18n-8e, pumped 110 bbl. oil and 12 bbl. water, Cromwell, shot 3,484-89 ft., casing 3,476 ft., 3,510 ft. T.D.

Hughes County

Wetumka district: Scruggs 2 Black, NW NE NE 13-9n-10e, 750,000 cu. ft. gas, Booch 2,179-2,217 ft., 2,600 ft. T.D., P.B. to 2,220 ft., casing 2,179 ft.

Lincoln County

Wilzetta South: Herndon 1 Lader, SE SW 10-12n-5e, 3,965 ft. T.D., dry.

Prague pool: Mid-States 2 Provaznik B, NW SE SW 33-12n-6e, pumped 220 bbl. oil and a little water, shot 3,281-89 ft. T.D., casing 3,267 ft.

Okfuskee County

Haydenville: Martin 1-A Parsons, NE NW NE 28-13n-10e, pumped 35 bbl. oil and 30 bbl. water, Wilcox, shot 3,592-3,600 ft. T.D.

Dill: Keener 1 McKernan, NW NE 26-12n-8e, 3,871 ft. T.D., dry.

Seran 6 Seran, NW SW NW 2-11n-8e, flowed 135 bbl. in 18 hr., Cromwell, 3,586-91 ft. T.D., casing 3,584 ft.

Weleetka pool: Doak 1 Community, SW NW 15-10n-11e, 3,125 ft. T.D., dry.

Fleming 2-A McKinney, SW NW SE 18-10n-11e, old well drilled deeper from 1,178 ft. to 2,224 ft. T.D., pumped 25 bbl. oil and 25 bbl. water, sand 2,214-24 ft.

Oklahoma County

Oklahoma City: Phillips 1 Holtz, SE NW 34-12n-3w, pumped 140 bbl., Wilcox, shot 6,484-6,533 ft., 6,545 ft. T.D.

Westgate 2 Carey A, NW SE 34-12n-3w, pumped 437 bbl., Wilcox, shot 6,481-6,521 ft., 6,523 ft. T.D.

Pontotoc County

West Fitts pool: Simpson-Roodhouse 1 Montpelier Trust, SW NW 20-2n-6e, 4,518 ft. T.D., dry.

Ada East: Crisso 1 Norris, NE NW 14-4n-7e, 2,765 ft. T.D., dry.

Allen: Sunray 10 Shields, SW NE NE 33-5n-8e, pumped 10 bbl., sand 810-29 ft. T.D.

Pottawatomie County

Wildcat: Mudge 1 Bowling, NW NW 25-9n-4e, flowed 111 bbl. in 24 hr. through 11/16-in. choke. Hunton lime, 4,238 ft. T.D.

Seminole County

Sylvian pool: Titus 2 Jackson, C NW NW 25-11n-8e, pumped 20 bbl. oil and 100 bbl. water, Booch, shot 3,084-95 ft., 3,097 ft. T.D., casing 3,082 ft.

Foundation 2 Berryman, SE NE NE 35-11n-8e, pumped 15 bbl., Cromwell, shot 3,428-32 ft., 3,433 ft. T.D.

OKLAHOMA DRILLING REPORT

Caddo County

Ray Stephens 1 Lankford ..... SE SE NW 6-6-9w
Drilling 4,480 ft.

Creek County

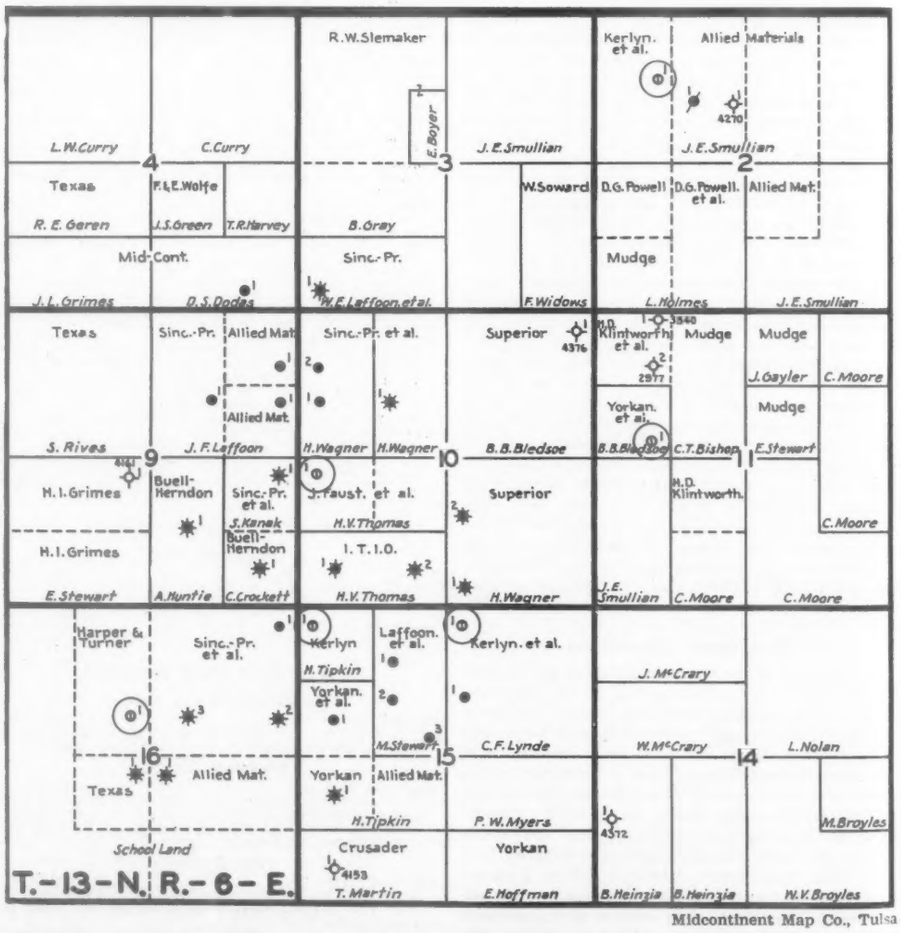
Trigg et al 1 Jennings ..... NW SW NE 18-16-8
Mayes 3,354 ft., Woodford 3,589 ft., drilling 3,600 ft.

R. R. Kirchmer 1 Carson ..... NE SE NW 23-17-9
Drilling 315 ft.

Custer County

Storm Feltz 1 Moore ..... NW SE SE 4-14-17
Waiting on casing, T.D. 1,145 ft.

(Continued on Page 63)



Midcontinent Map Co., Tulsa

Improvement in gas markets has increased drilling in the Laffoon pool of Lincoln County which once made news as a producer of black oil from the Wilcox. The drilling wells in the area are circled. Objective is the Hunton lime

EASTERN TEXAS FIELDS

Two Wells Near Completion at Hawkins Are Running High

By R. MARNE SANFORD

DALLAS, Tex., Dec. 30. — Another test in the recently opened Hawkins field of Wood County has drilled almost to the top of the Woodbine sand and is checking some 167 ft. higher than the Morrison discovery well. Meanwhile preparations are under way to drill in the S. J. Rotondi et al 1 Cobb, 2½-mile-south outpost and in the town of Hawkins. This well topped the Woodbine sand 369 ft. higher than the discovery well last week and set casing for completion attempts. The operators plan to drill the plug with bit on the tubing, clean out the hole, run an electrical survey and set screen for official completion, if the well does not flow when plug is drilled.

The second test nearing the Woodbine sand is the discovery operator Bobby Manziel 1 Bell, Wideman Survey, northwest of 1 Cobb and south of the discovery. It was last reported drilling below 4,000 ft. and checking high. Top of the Pecan Gap marker was 3,017 ft. or approximately 55 to 70 ft. lower than the 1 Cobb, but yet about 167 ft. higher than the discovery well on this particular marker.

Two new tests are preparing to start in the field. On or before January 5 a test is to be started by Walter Goldston, Houston, on a farmout tract from Sun Oil Co. consisting of the J. M. Osborne 94-acre tract in the H. S. Cobb Survey, about 1 mile south of Hawkins and on the Sabine River. This will be the farthest-south outpost yet for the field. This location is about ½ mile west of the A. M. Snyder 1 Holmes, 5,300-ft. failure in 1934, which is figured about 700 ft. lower than 1 Cobb in the Hawkins townsite.

Another new test is Earl Hollandsworth, Gladewater and Longview, 1 Robbins, George Brewer Survey, Lots 15 and 16, Reese addition in the Hawkins townsite and just northeast of the Rotondi 1 Cobb. Hollandsworth holds an assignment on a drilling permit issued by the commission 2 weeks ago to B. B. Orb, of Gilmer.

Meanwhile some attention turned to the original discovery well, Manziel 1 Morrison, as its official gage was completed. The well, in the Pollock Survey, about 3 miles north of Hawkins, pumped 128 bbl. of oil net in 24 hours, pumping from perforations in casing from 4,909-15 ft. The water volume was not known as it was kept drained off. Earlier pumping tests had shown the water to be about 75 per cent of the total fluid output. However, some observers estimated the water volume to be about 35 per cent of the total output on the official gage.

Several geologists are fairly well convinced that the discovery is not producing from the Woodbine sand at all but from the sub-Clarksville sand immediately below. The Woodbine sand carried some saturation: however, some believe the zone of perforations is opposite the sub-Clarksville sand rather than the Woodbine. This fact, if definitely established, would have little bearing on the structural positions or production possibilities of other tests in the area, for all geological correlations are being made from the tops of definite markers and not from the pay section of the well.

Other Known Structures Due Development

For several years it has been a much-discussed fact that no new Woodbine sand fields of much importance have been opened in eastern Texas. Several known structures throughout the district were periodically tested at various points. However, since the concentrated drilling of the Chapel Hill structure in Smith County and the results obtained, and in the light of the present discoveries on the Hawkins structure of Wood County, several other known structures are in line for thorough exploration and exploitation.

First of these is the Keechi dome in Anderson County. Several exploratory tests have been drilled during the past years. However, Texas Co. has staked 1 T. B. Greenwood as a 5,500-ft. Woodbine sand test to start immediately. It is 1,660 ft. from the south line and 990 ft. from the east line of a 377-acre tract in the M. Salasar Survey, 5 miles north of Palestine. Gulf formerly held the block and drilled several shallow tests in 1927, all failures.

Another area reported scheduled for a test is the Winona and Sand Flat area of northeastern Smith County. A considerable lease play developed following the opening of the Chapel Hill field about a year ago and drilling is forecast for the early months of the coming year.

EAST TEXAS FIELD COMPLETIONS

Smith County

Sun and Shell 1 Jack Walton, dry at 5,832 ft.

EAST TEXAS DRILLING REPORT

Gregg County

Humble 2 Horton-Dickson, E. Frost Sur., SW of Willow Springs, anhydrite 6,202-33 ft., drilling below 6,600 ft.

Red River County

J. F. Morrisey et al 1 Tyler, J. R. Mare Sur., 3 mi. E of Bogata, S.D. 2,910 ft., Georgetown 2,392 ft.

Camp County

Gulf 1 Venters, Wright Sur., drilling below 6,810 ft. in sandy shale and checking normal with the discovery well.

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Four Fields Discovered in North Texas as Year Ends

By R. MARNE SANFORD

WICHITA FALLS, Tex., Dec. 30. — New producing areas were opened during the past week at four different spots in three separate counties, some of them shallow discoveries and some deep.

Holding the majority of the attention was Wilbarger County's new area just west of the town of Harrold in the northeast part of the county. The well was Big Six Oil 1 A. P. Morris, Section 3, Block 14, H.&T.C. Survey. Sand showing oil was topped at 2,889 ft. and drilled to 2,911 ft., total depth. It was bailed down to within 200 ft. of bottom and allowed to stand overnight after which time fluid had filled the hole to 2,200 ft. Whether the column was 2,200 ft. of solid oil was not known; however, testing will continue after the holidays.

SUMMARY OF COMPLETIONS

North Texas

	No.	Bbl.	Footage
Oil: Hull-Silk	2	1,836	8,357
Archer field	2	59	2,074
Henderson	3	3,200	9,708
K.M.A.	5	2,285	19,861
Young field	4	953	12,207
Miscellaneous	4	3,935	12,754
Dry: Wildcats	5	.....	13,433
Fields	2	.....	5,717
Total	27	.....	84,111

West Central Texas

Oil: Fields	3	506	7,395
Dry: Wildcat	1	.....	895
Fields	2	.....	5,915
Total	6	.....	14,205

Wichita Discoveries

A new deep field was opened in Wichita County by Dorian & Barnes 1 Barnes, Section 10, Block 7, H.&T.C. Survey. The discovery well was completed about 10 days ago for 73 bbl. of oil daily following a 120-qt. shot from 4,008-50 ft. During the past week the operator's 2 Barnes drilled the pay and was preparing to complete from saturation logged from 4,077-85 ft. It is a south offset to the discovery. The discovery well was completed on a pumping gage; however, a flowing well is believed possible from the second attempt.

Also in Wichita County Hanlon-Buchanan, Inc., has completed 1 Burnett A, Section 34, I.&G.N. Survey, Abstract 435, for 30 bbl. daily, pumping, after a 120-qt. shot and a 3,500-gal. acid treatment in the pay from 4,130-62 ft. Further development has not been indicated for this area.

Archer County Shallow Spot

About 10 days ago a new shallow discovery was completed in Archer County and already the second well has been completed and a third is drilling. The discovery was Young & Woody Drilling Co. 1 Meade, W. S. Blount Survey, Abstract 13. The well made 72 bbl. daily, natural, pumping, from saturation logged in a lenticular sand from 954-958 ft.

The operator's 2 Meade was this week completed for 39 bbl. daily from sand from 955-960 ft. following a shot with six sticks of dynamite. Several locations are staked and immediate drilling will be started.

Deep Jack Discovery Gaged

Continental Oil Co. 1 Robertson, M. J. Swan Survey, deep Mississippian and Ellenburger discovery well for the southern part of Jack County, has reported an official gage. The well flowed 88 bbl. of oil in 12 hours from a total depth of 5,386 ft. Pay was logged in the lower Mississippian from 5,340 ft. to 5,370 ft. and on into the upper Ellenburger lime from that point to 5,386 ft. The potential flow was through ¼-in. choke after the section had been acidized previously with 1,000 gal. and 5,000 gal.

NORTH TEXAS COMPLETIONS

Archer County

Hull-Silk field: Bert Ligon and Deep Oil Dev. 7 Wilson, 135 bbl. in 3 hr., ¾-in. choke, 3,000 gal. acid, 4,570-75 ft.

Magnolia 4 Rutty B, 63 bbl. in 2 hr., ¾-in. choke, 32-qt. shot, 3,762-82 ft.

Archer field: F. P. Cullum 9 Falls C.S.L., 20 bbl. pumping, 1,000 gal. acid, 1,106-14 ft.

Young & Woody 2 Meade, 39 bbl., pumping, shot 6 sticks dynamite, 955-60 ft.

Wildcat: Fain-McGaha Oil 1 Nichols A, Sec. 46, A.T.N. C.L. Sur., dry at 4,802 ft.

Craig & Wilson 1 Powell, H. A. Allen Sur., Abst. 3, top Gunsight lime 1,301 ft., dry at 1,352 ft.

Adams Oil & Gas 1 Turbeville, Sec. 49, Jefferson C.S.L. Sur., Abst. 240, top Caddo lime 4,715 ft., dry at 5,024 ft.

Clay County

Wildcat: J. E. Kadane 1 Hamilton, Sec. 84, Byers Bros. subd., dry at 1,365 ft.

Henderson field: Shell 3 Coburn, 553 bbl. in 8 hr., open tubing, 3,175-3,233 ft.

Shell 4 Coburn, 294 bbl. in 8 hr., open tubing, 3,193-3,244 ft.

Shell 7 Henderson, 253 bbl. in 8 hr., open tubing, 3,173-3,231 ft.

Cooke County

Walnut Bend field: Sinclair Prairie 18 P. McGeorge, 80½ bbl. in 6 hr., open tubing, 4,871-96 ft.

Voth field: Humble 8 Hellman, 109 bbl., pumping, daily, 1,275-93 ft.

Montague County

Bonita field: Sinclair Prairie 5 Howard, 434 bbl. in 3 hr., ½-in. choke, 5,227-42 ft. in conglomerate.

Wichita County

K.M.A. field: Grace & Murphree 2 Burnett, 70 bbl. in 3 hr., ½-in. choke, 130-qt. shot, 4,104-36 ft.

Hanlon-Buchanan 26 Fassett-Tuttle, 62 bbl. in 3 hr., ¾-in. choke, 150-qt. shot, 4,018-51 ft.

W. H. Hammon 8 and 9 Hammon, abandoned locations.

J. E. Farrell 2 Bradley, 40 bbl. in 3 hr., 200-qt. shot, 3,875-3,945 ft.

Mulberry Oil 7 Bradley, 83 bbl. in 3 hr., ¾-in. choke, 3,853-3,901 ft.

Shell 15 Griffin, 165 bbl. in 6 hr., ¾-in. choke, 90-qt. shot, 3,776-3,828 ft.

Wichita field: Akin, Dimmock & Costley 3 Cates, 34 bbl. in 24 hr., pumping, 1,317-23 ft.

A. C. Parks 1 Roller, dry at 1,505 ft.

Young County

Young field: Carl Wainwright 2 Rogers, 76 bbl., pumping, daily, 894-904 ft.

Nelson Oil 1 McEntire, 35 bbl., pumping, daily, 75-qt. shot, 3,128-30 ft.

Zwiefel 1 Pistole B, 257 bbl. in 10 hr., ⅞-in. choke, 3,923-53 ft.

Eppenaur Drilling Co. 2 Eddleman, top black lime 3,700 ft., gray lime 3,780 ft., Marble Falls 4,150 ft., dry at 4,212 ft.

Union Prod. 1 E. True, 302 bbl., daily, natural, ¼-in. choke, 4,172-4,220 ft.

Wildcat: Jeffery Estate 1 Jeffery, 1,050 ft. from N and 150 ft. from E lines, Sec. 47, T.E.&L. Sur., dry at 890 ft.

NORTH TEXAS DRILLING REPORT

Archer County

Fain-McGaha Oil 1 A. P. Nichols A, 467 ft. from S and W lines, Sec. 46, A.T.N.C.L. Sur., show oil 4,748-63 ft., prepare to test.

W. B. Hamilton 22 Cartwright, 660 ft. from W and S lines, James Webb Sur., Abst. 664, T.D. 5,211 ft., P.B. 5,164 ft., 60-qt. shot 5,149-64 ft., cleaning out.

W. B. Omohundro 1 Browning, 467 ft. from S and E lines, Sec. 7, G.E.L. Sur., top Caddo lime 5,130 ft., coring 5,137 ft.

Shell 1 Coleman, 330 ft. to S and E lines of Lot 1, Sec. 74, A.T.N.C.L. Sur., top Gunsight lime 1,416 ft., drilling 1,590 ft.

Southern Pet. Exp. 1 Wilson A, 330 ft. W from railroad and 330 ft. from N line, Lot 4, Sec. 73, A.T.N. C.L. Sur., tight well, saturation reported from 4,014-40 ft., top Caddo 5,161 ft., preparing to test gas 5,215 ft.

Adams O. & G. 1 Turbeville, Lot 39, J.C.S.L. Sur., 5½-in. at 5,078 ft., top Caddo lime 4,725 ft., T.D. 5,177 ft., prepare to attempt completion from Caddo.

Walter Gant 1 Hunter, SE NW Sec. 7, Blk. 1, H.&T.C. Sur., top Ellenburger 5,370 ft., set 7-in. at 5,370 ft., T.D. 5,391 ft.

Jack Kadane 1 Griffin, SW SE Blk. 13, P.P.C.S.L. Sur., 4,500-ft. test, 1½ mi. E Griffin field, show oil 4,337-51 ft., T.D., 6⅝-in. casing 4,337 ft., flowed 346 bbl. oil in 8 hr.

W. B. Omohundro 1 Coleman, Blk. 52, Madison County School Lands Sur., drilling 4,250 ft.

Gibson & O'Donohoe 1 Jentsch, 330 ft. from N and E lines, H. Jentsch Sur., Abst. 995, 4,800-ft. test, drilling 2,405 ft.

Sam Kruger 1 Turbeville, 450 ft. from E and 389 ft. from S lines, NW Sec. 170, Robert Carson subd., 1,600-ft. test, moving in material.

Craig & Wilson 3 J. D. Powell, 1,350 ft. from S and 150 ft. from W lines H. A. Allen Sur., 1,325-ft. test, location.

King Oil 1 Taylor, Lot 1, Sec. 13, A.T.N.C.L. Sur., derrick.

E. C. Harlin 1 Waggoner, 150 ft. from S and W lines, Sec. 30, Clark & Plumb subd., 1,250-ft. test, spudded and S.D.

White & Duncan 1 Snyder, 1,600 ft. from W and 750 ft. from N lines Lot 21, Thomas Toby Sur., Abst. 643, 750-ft. test, rigging up.

Baylor County

Hattie B. Madden 2 J. J. James, Sec. 150, T.&N.O. Sur., show oil 1,352-63 ft., lost drill pipe at 2,308 ft., S.D.

Rogers & Lanfair 1 Howe, J. Howe Sur., Abst. 572, drilling 2,570 ft.

Clay County

F. H. Cohlke 1 Morgan Jones, 150 ft. from N and E lines of Lot 4, Graham subd. of Lot 46 in Parker C.S.L. Sur., drilling 1,330 ft.

Jack Kadane 1 Hamilton, 1,957 ft. from W and 1,565 ft. from S lines of Sec. 84, Byers Brothers subd., spudding.

Carlos Wagner 1 L. C. Thaxton, Sec. 2 T.&N.O. Sur., 6,500-ft. test, location.

R. H. Dearing 1 O. O. Ross, Sec. 8, J. Wyont Sur., Abst. 902, location.

Perkins & Cullum 1 Taylor A, 450 ft. from SW and 997 ft. from NW lines Sec. 44, Bacon subd., 1,500-ft. test, S.D. 1,026 ft.

Denton County

Amon G. Carter 1 W. P. and A. P. Allen, S. Westbrook Sur., drilling 6,720 ft.

Hood County

W. G. Martin 1 W. F. Thorman, E cor. of 2,956-acre ranch, F. F. Anderson Sur., 5,000-ft. test, spudded and S.D.

Aztec Oil 1 Gallagher, SW SE Robert Alway Sur., 3,000-ft. test, T.D. 1,180 ft.

Jack County

Paul Steed 1 E. Haag, 2,489 ft. from S and 467 ft. from W lines of W 130 acres of 600-acre farm in Nancy Overby Sur., Abst. 452, drilling 1,720 ft.

Continental 1 Robertson, M. J. Swan Sur., Abst. 1650, lime, show oil 5,345-86 ft., D.S. test recovered 240 ft. oil in 11 minutes, ran 5⅛-in. casing for test, top Mississippian lime 5,307 ft., base Mississippian 5,360 ft., top Ellenburger 5,380 ft., flowed 104 bbl. per day from 5,346-86 ft.

R. A. Conkling 1 M. Hoofle, A. James Sur., Abst. 318, 3 mi. S of Antelope, 3,500-ft. test, T.D. 3,108 ft., fishing casing.

Rathke Oil 1 Moselev. J. Harrison Sur., Abst. 259, 1,500 M.c.f. gas 4,645-50 ft., fishing tools 5,053 ft., T.D.

Hanlon-Buchanan 1 Smith, NW cor. Smith tract in S. H. Tilghman Sur., 8 mi. SW Jacksboro, 3,150-ft. test, waiting on tools 2,978 ft.

K. N. Davis 1 Jones, NW cor. E½ Sec. 2555, T.E.&L. Sur., 1 mi. SE Perrin, 2,500-ft. test, derrick.

Noah Davis 1 Rankin, E½ Sec. 2555, T.E.&L. Sur., moving in materials.

Three Bee Investment Co. 1 Armstrong, 700 ft. from S and 1,200 ft. from W lines, Sec. 2, W. P. Blake Sur., Abst. 1598, 3,300-ft. test, drilling 3,060 ft.

Harper-McClintock 1 Kinder, 1,400 ft. from E and 467 ft. from N lines, Sec. 2667, T.E.&L. Sur., spudded and S.D.

O. J. Perrin 1 Brumbelow, 1,045 ft. from S and 720 ft. from E lines, H. C. Ayers Sur., Abst. 4, S.D. 3,505 ft.

Montague County

Walter Gant 1 Will Laird, R. T. Millard Sur., Abst. 470, 7 mi. W of Sunset, 6⅝-in. casing at 6,641 ft., oil sand 4,857-82 ft., T.D. 6,651 ft., P.B. to 6,596 ft., perf. casing 4,865-73 ft., swabbed 67 bbl. oil in 2½ hr., S.I. for 5 days and opened to swab 80 bbl. oil in 3½ hr., made total of 225 bbl. oil in 4 days, swabbing unit broke, S.D.

T. F. Hunter 1 Fatheree, L. S. Gilliland Sur., 3 mi. W Illinois Bend, 6,600-ft. test, drilling 4,988 ft.

Benson & Benson 1 Joe Benton, Abel A. Lewis Sur., 2 mi. SE of Ringgold field, 10-in. 508 ft., top Caddo lime 5,718 ft., drilling 5,855 ft.

J. G. Hammond 1 Jester, 84-acre tract in E. Wingate Sur., Abst. 835, 2 mi. W Mallard, 6,500-ft. test, top Caddo lime 6,282 ft., coring 6,409 ft.

Sinclair Prairie 1 W. G. Hawkins, 631 ft. from N and 330 ft. from E lines of farm in Sec. 17, H.&T.C. Sur., 3 mi. SE of Ringgold, derrick up.

Parker County

Higginbotham 1 Gilbert, T.&P. Sur., Abst. 1958, T.D. 4,800 ft., fishing.

Tarrant County

Bruce Sullivan 1 W. C. Putnam, 200-acre tract in Milley Gilbert Sur., 6,500-ft. test, base Trinity 1,080 ft., drilling 5,220 ft.

Throckmorton County

Humble 1 Durham, Sec. 1627, T.E.&L. Sur., top Ellenburger lime 5,005 ft., drilling 5,220 ft.

Homer Moore and J. E. Dodson 1 J. O. Crump, Blk. 956, T.E.&L. Sur., location.

Humble 1 Allie McKnight, 1,100 ft. from N and 660 ft. from E lines, Sec. 2, D.L.&C. Sur., Abst. 1264, 5,000-ft. test, location.

Wichita County

Big Six Oil 1 Edmonson, 150 ft. from N and W lines, Sec. 13, Red River Lands subd., 10-in. at 20 ft., T.D. 24 ft., rigging up rotary.

Fred Browning 1 W. L. Warren, 996 ft. from N and 330 ft. from W lines, Sec. 32, W.V.F.L. Sur., S.D. 4,001 ft.

Golding & Cochran 1 D. R. Preston B, 2,970 ft. from N and 990 ft. from W lines, Sec. 26, Blk. 7, H.&T.C.

(Continued on Page 74)

By
ROBERT INGRAM

Stafford County Wildcatters Draw Attention With Show

THE most important development in western Kansas this week was in Stafford County where Perry A. Thayer, Kiowa Drilling Co. and Derby Oil Co. apparently had a discovery in 1 Roach, NW NW SE 12-22-14w.

The test, 2 miles southwest of the town of Seward and 10 miles northwest of St. John, topped the Arbuckle dolomite at 3,749 ft. and cored from 3,750-53½ ft., recovering 1 ft. of dolomite showing saturation in the top 8 in.

A string of 4½-in. casing was set at 3,749 ft. for a production test. Tops reported were: Fort Riley lime, 1,930 ft., and Lansing-Kansas City lime 3,414 ft. Nearest production is in the Gates and Drach Arbuckle pools 5 miles east.

Meantime Bay Petroleum spudded 1 P. Campbell in E½ NE NE 33-24-15w, 8 miles northwest of the Jordan pool. The drill site was located on the basis of a geophysical survey on acreage assembled by Thurman Hill of Washington, D. C., and Frank Hamilton of Wichita.

Skelly, Texas, Sinclair, Phillips, Champlin and Continental hold protection acreage in the area and Shell and Stanolind have been conducting extensive reflection seismograph surveys during the past month in the north two-thirds of 24-15w.

SUMMARY OF COMPLETIONS

	No.	Prod.	Footage
Oil wells: Trapp	2	1,324	6,531
Stoltenberg	3	6,159	9,919
Cunningham	1	610	3,505
Kraft	1	3,000	3,306
Other fields	13	8,652	39,575
Gas wells: Grant field	1	*11.3	2,712
Dry holes: Fields	†7		24,983
Wildcats	4		18,461
Total	32		108,992

*Million cu. ft. †Cunningham 1, Stoltenberg 1, Kraft 1, Ark City 1, Bemis 1, Campbell 1, Zyba 1.

Rush County Test Deepening

In Rush County, Lion Oil & Refining 1 Werth, W½ SW SE 10-16-19w, which had a show of oil in rotary cuttings last week from 3,710 ft., was drilling deeper after finding water in the Cambrian sand at 3,715 ft. If no production is found it will be plugged back to test the shallower Kansas City lime.

Two Pools Extended

The Davidson Northeast pool in Russell County was opened up by the Bradena McClure 1 Phillips, 34-15-11w, 1¾ miles northeast of the Davidson pool. The well was given a temporary potential of 289 bbl. from the Gorham sand. This pool will probably prove to be connected.

The Canton North pool of eastern McPherson County was extended ½ mile north by the J. Johnson 1 Keefer, NW NW SW 25-18-1w. After treatment with 1,000 gal. of acid, the well flowed 30 bbl. of oil an hour with only a small showing of water from the Mississippian chat at 2,814-31 ft. Discovery well for the pool was Cities Service 1 Cunningham, SE cor. 26-18-1w, completed years ago.

Thomas County Wildcat Tested

Discovery of oil in a Permian lime in Thomas County, 60 miles west of the Morel pool, wis indicated in Alva Billings 1-A Ryan, E½ NE SE 27-8-32w, where cuttings showed saturation between 3,610 ft. and 3,625 ft. Eight-inch casing was set at 3,610 ft. and the lime will be acidized for a test.

KANSAS COMPLETIONS

Barton County

Rick pool: Carlock et al 1 Rick, EL NE NE 12-19-11w, pumped 585 bbl., Arbuckle 3,347-60 ft., acid.

Kraft pool: Texas 3-A Burmeister, E½ NE SW 2-17-11w, 3,396 ft. T.D., Arbuckle 3,392 ft., dry.
Texas 7 Disque, NW NE SW 3-17-11w, Arbuckle 3,296-3,306 ft., 3,000 bbl.
Prusa pool: Derby Oil 3 Bernsdorff-Janke, NW SE NE 33-16-11w, swabbed 128 bbl. in 1½ hr., Arbuckle 3,360-67 ft.

Butler County

El Dorado pool: Cities Service 16 Lee, SW NE NE 17-26-5, pumped 180 bbl., Lansing 1,634-58 ft.

Cowley County

Ark City pool: McKnab et al 1 Land & Power, N½ N½ SW 15-34-3, 3,352 ft. T.D , Mississippi 3,317 ft., dry.

Ellis County

Bemis pool: Phillips 5 Bemis, W½ SW NE 21-11-17w, 3,501 ft. T.D., dry.
Blue Hill pool: Tom Palmer 1 Smith, W½ SW NW 13-12-16w, swabbed 167 bbl., Arbuckle 3,340-54 ft. T.D., acid.
Koblitz pool: Doley Oil 2 Koblitz, WL SW NW 23-12-18w, pumped 114 bbl., Arbuckle 3,668-76 ft.
Ubert pool: Bay Petroleum 2 Keys, WL SE SW 1-13-18w, pumped 319 bbl., Arbuckle 3,608-26 ft., acid.

Ellsworth County

Stoltenberg pool: Stanolind 1 Hagey, EL SW SW 16-16-10w, Arbuckle 3,393 ft., 3,406 ft. T.D., dry.
Atlantic et al 4-E Stoltenberg, N½ SW SE 27-16-10w, 3,000 bbl.
Skelly 2 Meyer, N½ SW NE 35-16-10w, Arbuckle 3,312-14 ft., 3,000 bbl.
Pryor & Lockhart 6 Stratman, W½ SW NW 1-17-10w, pumped 159 bbl., Arbuckle 3,282-3,305 ft. T.D.
Bloomer pool: Skelly 1 Smith, S½ SE NW 32-17-10w, pumped 287 bbl. in 15 hr., Arbuckle 3,230-44 ft.

Grant County

Grant gas pool: United Production 1 Trousdale, SE SE NW 12-30-35w, 11,312,000 cu. ft. gas, Herrington 2,516-2,712 ft., acid.

Greenwood County

Reece pool: K-R-H Oil 3-A Jackson, SE SW NE 23-26-9e, pumped 15 bbl., Mississippi lime 2,198-2,212 ft., 2,255 ft. T.D.

Ness County

Wildcat: Aladdin Petroleum et al 1 Jedlicka, C NE NE 33-20-23w, Topeka 3,345 ft., Lansing 3,711 ft., Mississippi 4,348 ft., Viola 4,539 ft., Simpson 4,762 ft., Arbuckle 4,770 ft., 4,872 ft. T.D., dry.

Pratt County

Cunningham pool: S. A. Springer 1 Steffen, S½ N½ SE 24-27-11w, pumped 100 bbl. water and 25 bbl. oil after plugging back from 4,144 ft. T.D. to 3,550 ft. and acidizing, Lansing 3,475 ft., dry.
Skelly 4-A Krehbiel, WL NW NE 25-27-11w, flowed 610 bbl., Lansing 3,445-3,505 ft. T.D., acid.

Rice County

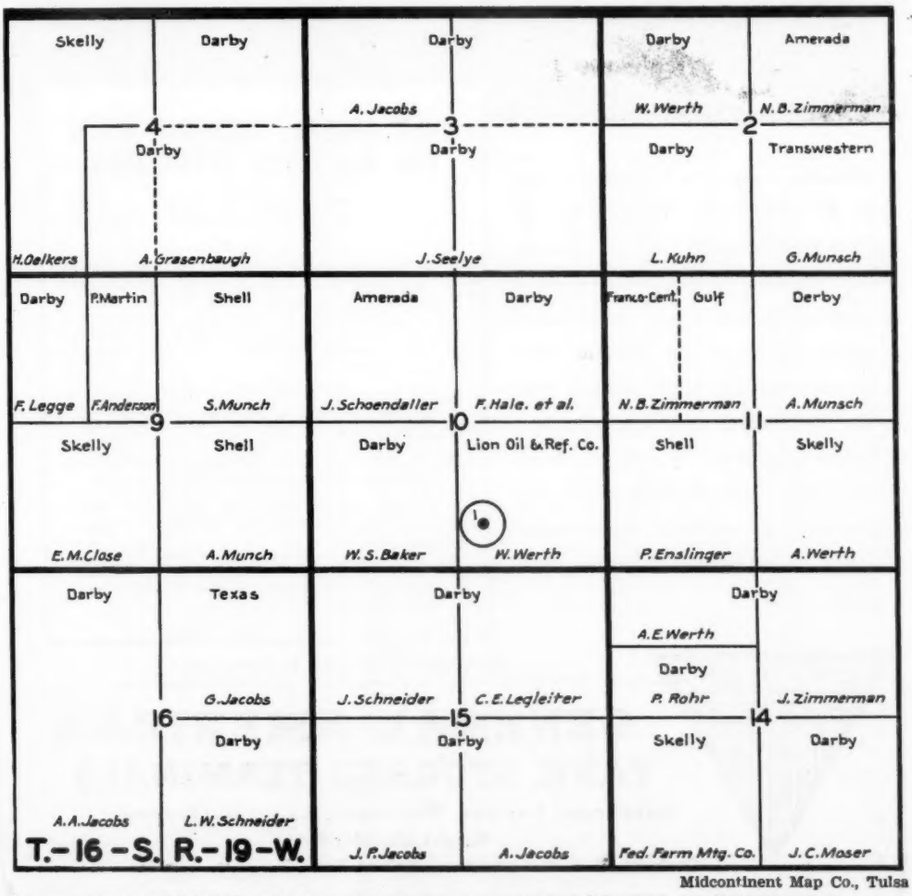
Chase pool: McPherson Drilling 1 Grizzell, SW SE NE 8-19-9w, flowed 30 bbl. per hr., Arbuckle 3,244-46 ft.
Campbell pool: Cities Service 1 Apel, EL NE SW 33-19-9w, Arbuckle 3,227 ft., 3,253 ft. T.D., dry.
Keesling pool: Colorado Petroleum 1 Tappan, WL SW NE 10-20-9w, pumped 406 bbl., Arbuckle 3,216-40 ft.

Rooks County

Layton pool: Broadview Oil 1-A Livingood, WL NW NE 11-9-16w, pumped 204 bbl., Lansing 3,268-75 ft., 3,283 ft. T.D., acid.
Wildcat: Helmerich & Payne 1 Baumgarten, EL SE NW 25-9-19w, 3,700 ft. T.D., dry.

Russell County

Trapp pool: Helmerich & Payne 1 Sylvia, EL SE NW 20-15-13w, pumped 1,018 bbl., Lansing 3,089-94 ft., 3,171 ft. T.D., acid.
Sellens pool: Sinclair-Prairie et al 2 Sellens, WL NW SW 36-15-13w, pumped 306 bbl., Arbuckle 3,356-57 ft., T.D. 3,360 ft.
Driscoll pool: Stanolind 1 Driscoll, N½ SW SE 30-15-11w, pumped 281 bbl., Arbuckle 3,255-60 ft., 3,266 ft. T.D.
Big Creek: Aylward Production 2 Rusch East, EL SE SE 30-14-14w, pumped and flowed 3,157 bbl., acid.



Midcontinent Map Co., Tulsa

Western Kansas tests are gradually extending the flanks of the Barton arch both north and south. Lion Oil & Refining 1 Werth, W½ SW SE 10-16-19w, on the extreme south flank, had a show of oil in rotary cuttings at 3,710 ft. but after a test is drilling deeper

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A DIVISION OF GENERAL AMERICAN TRANSPORTATION CORPORATION

Wildcat: Pryor & Lockhart 1 Borrell, NL NE SE 3-15-11w, 3,220 ft. T.D., dry.

Saline County

Wildcat: E. B. Shawver 1 Lacquement, E½ SE SW 30-16-1w, 2,738 ft. T.D., dry.

Sumner County

Zyba pool: Hawkeye Oil 1 Carter, S½ SW SE 7-30-1, 3,931 ft. T.D., dry.

KANSAS DRILLING REPORT

Cowley County

Wakefield & Vollmer 1 Durham, C W½ NW SE 34-30-3 Drilling 3,280 ft.
Steibar Oil 2 Bahruth ..... NE SE NE 8-34-3 Old well drilled to Arbuckle 3,735-37 ft., flowed 20 bbl. an hr.

Ellis County

Stearns Drlg. 1 Witt ..... C S½ NE SW 28-12-16w Drlg. 3,160 ft.
Guido Piggott et al 1 Kuhn C N½ NE NW 17-14-16w Lansing 3,181 ft., coring 3,263 ft.
Patton Drlg. 1 Werth ..... C W½ SW SE 10-16-19w Rigging up standard tools 3,716 ft.

Graham County

Cities Service 1 Kuehnl ..... NE SW SW 34-9-21w Drilling 200 ft.

Greenwood County

C. E. Ash 1-B Taylor ..... NW NE NW 7-27-12 Drilling 300 ft.

Jefferson County

Caufield & Sullivan 1 Ragan .... SW SW SE 19-10-20 T.D. 950 ft., cleaning out.

Leavenworth County

McLaughlin & Sons 1 Thorp ..... C NE NE 27-10-20 Drilling 1,661 ft.

Reno County

Cities Service 1 Crandall ..... NW NW NE 23-23-10w Base Mississippi 3,655 ft., Viola 3,786 ft., fair porosity 3,791-95 ft., 7-in. casing 3,790 ft.

Sedgwick County

Olson Oil 1 Macredie ..... C N½ NE NE 15-29-2w Topeka 1,937 ft., Lansing 2,929 ft., drilling 3,381 ft.

Stafford County

Thayer et al 1 Roach ..... NW NW SE 12-22-14w Lansing 3,425 ft., Sooy 3,697 ft., Viola 3,698 ft., Arbuckle 3,749-50 ft., fair saturation.

AVERAGE DAILY PRODUCTION

LEADING KANSAS FIELDS

	Dec. 28	Dec. 21
Burrton	7,200	7,150
Ritz-Canton	3,850	3,850
Graber	2,750	2,500
Hollow-Nikkel	1,700	1,700
Voshell	1,800	1,750
Wellington	1,100	1,050
Lorraine	800	1,200
Stoltenberg-Wilkins	4,320	3,410
Bloomer	3,700	5,300
Chase	3,550	5,050
Geneseo	4,100	4,850
Silica	14,000	16,200
Wherry	1,500	3,000
Trapp district	16,350	17,850
Balance Russell County	20,100	20,750
Sedgwick County	3,150	3,200
Bemis	9,750	9,600
Burnett	6,550	5,900
Kingman County	280	1,030
Stafford County	10,155	11,370
Greenwood County	8,750	8,750
El Dorado	7,150	7,150
Total Kansas	186,350	199,700

FOREST CITY BASIN

ST. JOSEPH, Mo., Dec. 30.—Development of the Falls City pool in Richardson County, Nebraska, where the twenty-ninth well was completed this week, is at a point that gave some indication of the water situation.

A checkup from east to west in the very middle of the pool showed that water intrusion increases on the west slope of the structure at this point. Harry

(Continued on Page 77)

NEBRASKA DRILLING REPORT

Lancaster County

August Krueger 1 Roe.....SE SW SW 5-7-7 S.D. 989 ft.

Nemaha County

Frank Engles 1 Wheeler.....NE cor. 9-4-14 Lansing 1,035 ft., show oil in sand 2,130-70 ft., Hunton 2,658 ft., shut down 2,668 ft.
Francis Krone 1 Morehead ..... C SE NE 35-4-16 Lansing 918 ft., drilling 2,800 ft.
Bow & Arrow 1 Shriefer .....C N½ NE SW 20-5-14 Lansing 885 ft., 8-in. casing 1,726 ft., S.D. 1,792 ft.
Spoon et al 1 Gauchat.....SW NW NE 26-6-13 S.D. 810 ft.

Richardson County

Marion Travis 1 Stauffer.....SW SW NE 22-1-13 Lansing 760 ft., base Kansas City 1,020 ft., Mississippi 1,680 ft., Hunton 1,970 ft., Viola 2,770 ft., drilling 3,035 ft.
Uhri Oil 1 Ogle .....NW SE SE 9-1-14 T.D. 2,260 ft., pumped 300 bbl. fluid, mostly water.
Powers & Stalder 1 Lee .....NE NW NE 16-1-14 Lansing 895 ft., drilling 1,200 ft.
Pioneer Oil 1 Hough-Hill.....C SE SW 6-1-16 6-in. casing 2,015 ft.
Liberty Development 1 Fehr .....C NW SE 31-2-16 Mississippi 2,160 ft., drilling 2,235 ft.
I. T. I. O. 1 Ege .....C NE SE 19-3-16 Kinderhook 2,384 ft., Hunton 2,615 ft., S.D. 2,651 ft.
W. H. Martgan 1 Smith .....C E½ NW NW 31-3-16 Lansing 909 ft., Mississippi 2,137 ft., Kinderhook 2,270 ft., drilling 2,442 ft.

Ten Tests Seek Oriskany Gas In West Virginia

By STAFF CORRESPONDENT

PITTSBURGH, Pa., Dec. 30.—During the past week 23 operations were completed in the lower eastern fields of which 3 were dry, 18 gas wells, and 2 oil producers.

SUMMARY OF COMPLETIONS

Southwest Pennsylvania

	No.	Prod.	Footage
Gas wells	5	†0.4	11,292
West Virginia			
Oil wells	2	*12	3,110
Gas wells: Oriskany	3	†14.3	15,390
Other	10	†2.9	23,859
Dry holes	3	.....	6,908
Total	18	.....	49,267

*Barrels. †Million cu. ft.

WEST VIRGINIA

In Poca district, Kanawha County, the Columbian Carbon Co. test on the John Price farm is drilling at 6,658 ft. with a revised top of the Clinton sand at 6,630 ft. after restringing the line. It is now 82 ft. in the sand with no showing. In the Copenhaver heirs test this company is drilling at 5,689 ft. or 81 ft. below the top of the Newburg horizon.

In Harrison County the rotary test of Hope Natural Gas Co. on the C. S. Gribble farm in Grant district is drilling at 9,656 ft. in shaly sand.

In Jackson County the wildcat of United Carbon Co. on the B. B. Meadows farm in Ripley district is drilling at 4,460 ft. In Ravenswood district, the wildcats of the Columbian Carbon Co. on the F. F. Starcher and F. L. Roliff farms are drilling at 3,230 ft. and 2,357 ft. respectively. Boggess Drilling Co. has started building the rig for the test on the Mary Smith farm. In Washington district, the Columbian Carbon Co. has started drilling the test on the W. D. Kiser farm.

In Peytona district, Boone County, Owens, Libby-Owens gas department reached 5,118 ft. or 10 ft. in the Corniferous lime in the 16 Bull Creek Coal Land Co. and has a fishing job. Here Columbian Carbon Co. is drilling at 4,200 ft. in an Oriskany test on its lease of the Bull Creek Coal Co. tract.

Boone County

Scott district: Owens, Libby-Owens 29 Allen & Pryor, 149,000 cu. ft. gas, Big lime 1,330-1,520 ft., Injun 1,520-45 ft., Berea 2,045-65 ft., R.P. 300 lb., T.D. 2,089 ft.

Calhoun County

Sherman district: Hope 8520 C. A. Jarvis, dry, show of gas in Injun sand, Big lime 2,046-2,177 ft., Injun 2,177-90 ft., Berea 2,490-2,500 ft., T.D. 2,552 ft.

Washington district: O. D. Jones 1 Aristotle Butler, 4 bbl. and 200,000 cu. ft. gas, Big lime 2,017-2,191 ft., Injun 2,123-91 ft., oil and gas 2,123-90 ft., T.D. 2,195 ft.

Gilmer County

Center district: Carnegie 1 Franklin Maxwell, 400,000 cu. ft. gas, Maxton sand 1,735-90 ft., gas 1,740-45 ft., gas 1,762-76 ft., T.D. 1,798 ft.

Hancock County

Grant district: R. J. Braden Co. 60 C. E. Brenneman, 8 bbl., Berea, T.D. 915 ft.

Lincoln County

Jefferson district: Brooks Gas Co. 1 Boston & Wootson Adkins, 238,000 cu. ft. gas, Big lime 1,637-1,810 ft., Big Injun 1,840-1,927 ft., Berea 2,317-47 ft., brown shale 3,033 ft., gray shale 3,381 ft., brown shale 3,395-3,702 ft., R.P. 250 lb., T.D. 3,702 ft.

Logan County

Logan district: Boone County Coal Corp. 19 fee, 993,000 cu. ft. gas, Big lime 2,525-2,720 ft., Injun 2,720-55 ft., Berea 3,194-3,219 ft., R.P. 130 lb., T.D. 3,241 ft.

Putnam County

Curry district: Shafer Gas Co. 2 C. S. Holandsworth, 785,000 cu. ft. gas, Salt sand, T.D. 1,045 ft.

Buff Creek Gas Co. 1 A. M. Pullens, 106,000 cu. ft. gas, Big lime, gas 1,631 ft., 1,682 ft. and 1,711 ft., T.D. 1,737 ft.

Ritchie County

Clay district: J. W. Kerns and S. A. Smith 1 Louis Melincoff, 112,000 cu. ft. gas, Injun sand, T.D. 1,955 ft.

Union district: Pittsburgh & W. Va. 1 Leland D. Heckert, dry, through Berea, T.D. 2,405 ft.

Tyler County

Centerville district: Tyler Wood Oil & Gas Co. 1 W. C. Pierson, dry, Squaw sand, T.D. 1,951 ft.

Upshur County

Meade district: Sang Run Oil & Gas Co. 1 E. L. Morrison, 26,544 cu. ft. gas, Gordon sand 2,074-2,177 ft., gas 2,080-2,100 ft., T.D. 2,292 ft.

Wayne County

Ceredo district: Hamilton Gas Co. 1 Caroline Blatt 68,000 cu. ft. gas, Big lime 1,177-1,230 ft., Injun 1,394-1,545 ft., Berea 2,155-80 ft., brown shale 2,482-2,984 ft., T.D. 2,984 ft.

Union district: R. H. Adkins and Mullins Gas Co. 1 Tennessee Spurlock, 69,000 cu. ft. gas, Big lime 1,248-1,435 ft., Injun 1,490-1,590 ft., Berea 2,058-64 ft., Brown shale 2,550-3,010 ft., R.P. 210 lb., T.D. 3,016 ft.

ORISKANY GAS FIELDS

Kanawha County

Poca district: Columbian Carbon 1 L. D. Reynolds, 1,590,000 cu. ft. gas after shot, Corniferous lime 4,983-5,102 ft., Oriskany 5,102-48 ft., and 5,164-80 ft., T.D. 5,182 ft.

DRILLING

Poca district: United Fuel 4880 Allie Pritt, Corniferous 4892 ft., 7-in. casing 4,907 ft.

Union district: Godfrey L. Cabot 3 L. M. Lafollette. Corniferous lime 4,698 ft.

Jackson County

Ripley district: Rubin & Rafferty 1 Marco and Mary Garnes, 6,615,000 cu. ft. gas, Corniferous lime 4,831-4,942 ft., Oriskany sand 4,942-73 ft., gas 4,944-49 ft., gas 4,955-60 ft., T.D. 4,973 ft. West Virginia Gas Corp. 1 L. T. Huffman, 6,125,000 cu. ft. gas, Corniferous lime 5,108-5,215 ft., Oriskany 5,215-35 ft., gas 5,217-35 ft., T.D. 5,235 ft.

SOUTHWEST PENNSYLVANIA

On Chestnut Ridge in South Union Township, Fayette County, Peoples Natural Gas Co. is drilling at 6,521 ft. in 3 Piedmont Coal Co. or 473 ft. below the top of the Tully lime. In No. 4 they are now drilling at 225 ft. New Penn Development Co., William E. Snee et al are drilling at 3,655 ft. in 3 Summit Hotel (Heyn). In North Union Township, Wasson et al have reached 6,748 ft. in 2 J. H. Sorg, being delayed with caving in the Marcellus.

Armstrong County

Cowanshannock Township: Peoples 2 William Boyer, 38,000 cu. ft. gas, Bradford sand, T.D. 3,457 ft.

Clarion County

Limestone Township: George Hall 1 Perry Thompson, 50,000 cu. ft. gas, Hundred-foot sand, T.D. 966 ft.

Red Bank Township: O. H. Culbertson 2 Gabe Stahlman, 176,000 cu. ft. gas, Hundred-foot and Thirty-foot sands, T.D. 1,105 ft.

Fayette County

German Township: J. H. Carnell 1 Albert Lily, 126,000 cu. ft. gas, Fifth sand 2,253-2,303 ft., gas 2,254-60 ft., T.D. 2,303 ft.

Indiana County

Washington Township: T. W. Phillips 1 S. Kunkle, 38,-

(Continued on Page 71)

Oklahoma Fields

(Continued from Page 58)

W. J. Curn 1 Harris ..... SE SE NE 35-14-18
Drilling 1,680 ft.

Grady County

W. H. Atkinson 1 Gilks ..... NE NE SE 22-5-7w
Drilling 3,410 ft.

Hughes County

Magnolia 1 McKay ..... SW SW SE 16-5-11
Drilling 5,539 ft.

Ed Scruggs 2 Black ..... NW NE NE 13-9-10
T.D. 2,600 ft., P.B. 2,220 ft., flowed 671,000 cu. ft. gas from Booch 2,179-2,217 ft.

Jackson County

G. R. Burke 1 Estes ..... SW SW NE 34-3-19w
S.D. 860 ft.

Jefferson County

Danciger 1 Hefner ..... SE cor. 3-4s-4w
Arbuckle 3,609 ft., T.D. 3,805 ft., fishing.

Kay County

Earl Williams 1-A Trueblood .... NE SE SE 25-25-1w
Drilling 1,340 ft.

Marland Oil 1 Kreger ..... SE SE NE 4-25-2w
S.D. 280 ft.

Gurley & Cullison 1 Casemore .... NE SE NW 15-26-1
S.D. 840 ft.

Union Nat. O. & G. 1 Long ..... NW NW NW 29-28-1
Old T.D. 1,670 ft., drilling 3,372 ft., show oil.

Kiowa County

Artie Baker 1 Coakley ..... NW NE SE 30-7-17w
Show gas 1,085 ft., drilling 1,155 ft.

Lincoln County

Mid-Continent 1 School Land .... NW NE NW 36-12-3
Drilling 2,800 ft.

Logan County

I.T.I.O. 1 Cronkite ..... NE NE NW 22-15-4w
Layton 5,190 ft., Hogshooter 5,440 ft., Oswego 6,040 ft., drilling 6,290 ft.

Noble County

Adams et al 1 Albright ..... SW SW SE 31-23-2w
S.D. 700 ft.

Okfuskee County

W. O. Carte 1 Bucco ..... NE NE SE 20-10-12
Drilling 1,600 ft.

Haves Drlg. 1 McKernan .... C E½ SE NW 25-12-8
Drilling by pipe 3,282 ft.

Henry Oil 1 Dudgeon ..... NE SW SE 36-12-9
Oswego 1,290 ft., Gilcrease 3,055 ft., T.D. 3,292 ft., testing.

Mid-Continent 1 Stokes ..... SW SE SW 20-13-8
Oswego 2,455 ft., Prue 2,495-2,530 ft., Bartlesville 3,400-08 ft., dry, show oil in Dutcher 3,550 ft., Cromwell 3,627-28 ft., show oil in Misener 4,065 ft., drilling 4,182 ft.

Shell 1 Davis ..... SW cor. 18-13-9
Prue 2,095 ft., Bartlesville 2,993-3,040 ft., Booch 3,235 ft., show oil, drilling 4,087 ft.

Oklahoma County

Harper-Turner 1 Harper ..... NW NW SW 17-14-2w
Drilling 5,750 ft.

Pawnee County

Alma Oil 1-A Hill ..... C N½ NW SW 1-21-5
Mississippi lime 3,145 ft., Wilcox 3,363 ft., set 5-in. casing 3,250 ft., drilled plug and flowed 100 bbl. oil and 250 bbl. water.

Pottawatomie County

Hilton Phillips 1 Griffenstein ..... NE NE NW 22-8-2
Hogshooter 3,680 ft., Checkerboard 4,010 ft., drilling 4,590 ft.

Keriyn Oil 1 Cherry ..... SE NE NW 32-8-5
Senora 3,560 ft., drilling 3,717 ft.

Seminole County

Delaney and Atlantic 1 Clark .... NE NE SE 30-8-7
Show oil 2,158-70 ft., drilling 3,070 ft.

Alma Oil 1 Borden ..... NE SE NW 4-8-8
First Wilcox 4,273-92 ft., second Wilcox 4,311 ft., T.D. 4,326 ft., water, P.B. 3,370 ft. to test Cromwell.

Weldon Hall 1-A Jackson ..... C N½ NE SE 14-7-7
Drilling 2,630 ft.

Joe Josephson 1 Snider ..... NE SW NE 5-6-6
Drilling 2,035 ft.

Stephens County

Halliburton 1 fee ..... SE SW SW 5-1s-7w
T.D. 766 ft., testing.

Gulf 1 Krieger ..... E½ NE SW 3-2-5w
Proposed 8,000-ft. test, spudded.

Texas County

Starr et al 1 Joliffe ..... C NE NE 28-3n-19e.c.m.
T.D. 2,560 ft., S.D.

Tillman County

Price et al 1 Crow ..... NW NW NE 24-2s-15w
Drilling 1,340 ft.

Woods County

Gulf 1 Hess ..... C NE NW 33-23-13w
Drilling 7,493 ft.

AVERAGE DAILY PRODUCTION

LEADING OKLAHOMA FIELDS

	Dec. 28	Dec. 21
Allen	4,825	4,800
Billings	6,225	6,225
Burbank	7,200	7,250
South Burbank	7,350	7,325
Balance Osage	16,625	16,850
Blackwell district	3,375	3,350
Bristow-Slick	6,200	6,175
Chandler	1,050	1,075
Crescent	1,975	2,000
Cromwell	2,825	2,850
Cushing-Shamrock	8,850	8,975
Duncan	3,550	3,550
Edmond	3,675	3,750
Fish	2,850	2,875
Fitts	13,950	14,200
Jesse	2,025	2,000
Graham-Fox	2,200	2,250
Gray	850	825
Healdton	8,325	8,350
Hewitt	7,500	7,400
Keokuk	2,650	2,700
Konawa	1,000	1,025
Lucien	6,450	6,500
Moore	1,075	1,075
Northeastern counties	16,850	17,250
Oklahoma City	93,775	87,850
Olympic	1,750	1,750
Ramsey	3,500	3,500
Sasakwa	1,375	1,400
Sholem-Alechem	2,550	2,550
Seminole district:		
Bowlegs	6,425	6,400
Carr City	2,150	2,125
Dora	1,550	1,650
Earlsboro	3,875	3,850
East Earlsboro	1,725	1,725
South Earlsboro	525	500
Little River	6,550	6,475
East Little River	625	625
Maud	475	500
Mission	1,225	1,200
Seminole	6,225	6,225
East Seminole	1,025	1,025
Searight	1,800	1,875
Total Seminole	34,175	34,175
St. Louis-Pearson	21,375	21,400
Tatums-Tussy	5,250	5,200
Tonkawa-Garber-Thomas	3,525	3,550
Wewoka	1,450	1,500
Yale-Jennings	3,100	3,075
Total Oklahoma	397,100	391,875

Deep Clinton Test in Central Ohio Finds Small Gas Pay

By STAFF CORRESPONDENT

NEWARK, Ohio, Dec. 30.—Small gas wells predominated in the Ohio completions. Only two have an open flow of better than a million cubic feet. Of the 36 tests completed, 19 were gas, 9 were dry, 8 were small pumpers, and 1 was recompleted as a small gas well.

In the deeper drilling, a wildcat test 3 miles north of Dennison in Tuscarawas County, found a small gas pay in the Clinton at 5,200 ft. A Clinton test at New Philadelphia was dry at 5,000 ft.

The sub-Trenton test in Licking by McCloy, Inc., in Jersey Township, Section 21, is fishing for a bailer at 4,330 ft.

In Columbiana County the Natural Gas Co. of West Virginia is drilling at 4,200 ft. in the deep test on the William Tice farm in Section 19, Wayne Township. This is 23 ft. in the Onondaga. In Belmont County this company is drilling at 7,326 ft. in the test scheduled for the Clinton sand on the E. A. Mobley farm, Section 19, Smith Township. It is now in the lime.

SUMMARY OF COMPLETIONS

Ohio

	No.	Prod.	Footage
Oil wells	8	47	4,487
Gas wells	18	*9.5	39,484
Dry holes	9	.....	19,250
Total	35	.....	63,221
Recompletions	1	*.2	.....
Input wells	3	.....	1,415

Eastern Kentucky

Oil wells	1	7	352
Gas wells	4	*.80	11,847
Dry holes	1	.....	.....
Total	6	.....	12,299

Western Kentucky

Oil wells	2	55	3,490
Dry holes	6	.....	7,163
Total	8	.....	10,653

Indiana

Oil wells	3	273	7,042
Gas wells	3	*.22	2,366
Dry holes	7	.....	10,932
Total	13	.....	20,340

*Million cu. ft.

Ashland County

Perry Township: Sloan & Zook 1 T. W. Smith, Sec. 20, 3 bbl., shot, Berea, T.D. 775 ft.

Athens County

Lodi Township: Townsend 2 Goldi Konkoski, Sec. 11, 110,000 cu. ft. gas, shot, second Berea, T.D. 1,785 ft.

Carthage Township: Ohio Fuel 1 Guy Dean, Sec. 25, 524,000 cu. ft. gas, Berea, T.D. 1,680 ft.

Harrison County

Monroe Township: Heavilin 1 J. L. Reed, Sec. 14, 60,000 cu. ft. gas, shot, Berea, T.D. 1,015 ft.

Jackson County

Milton Township: Fred Hurt 4 McKell heirs, Sec. 28, 40,000 cu. ft. gas 1 hr. after shot, Ohio shales, T.D. 1,875 ft.

Newark Field—Licking County

Newark Township: Ohio Fuel 1 A. B. Crawford, first quarter, 710,000 cu. ft. gas, Clinton, T.D. 2,380 ft.

Newton Township: Moore et al 1 Jesse Howell, first quarter, 1,250,000 cu. ft. gas, Clinton, shot, T.D. 2,758 ft.

William L. Brooks 1 fee, fourth quarter, Lot 5, dry, Clinton, T.D. 2,655 ft.

Mary Ann Township: St. Albans Drilling Co. 1 Shell Evans, fourth quarter, dry, Berea, T.D. 590 ft.

O. P. Spengler et al 4 John A. Hughes, Sec. 6, 2 bbl., Berea, T.D. 742 ft.

Perry Township: Lacknett et al 3 T. R. Van Allen, Sec. 17, 70,000 cu. ft. gas, Berea, T.D. 662 ft.

Bowling Green Township: Midland Oil 2 Homer Cooperrider, NE Sec. 9, 5 bbl., Berea, T.D. 725 ft.

Madison Township: J. T. Bebout 3 O. V. Hollz, Sec. 5, 1,244,000 cu. ft. gas, Clinton sand, T.D. 2,724 ft.

Lorain County

Columbia Township: Ohio Fuel 1 William Fox, Lot 58, dry, Clinton, T.D. 2,765 ft.

Penfield Township: Wiser Oil 2 Ray Bachellor, Lot 17, Sec. 2, 260,000 cu. ft. gas, shot, Clinton, T.D. 2,441 ft.

Pittsfield Township: Ohio Fuel 1 George Arnold, Lot 140, 390,000 cu. ft. gas, Clinton, T.D. 2,340 ft.

Medina County

Chatham Township: N. Y. O. Oil et al 4-J Thomas Brown, Jr., Tr. 16, Lot 22, 20 bbl., Berea, T.D. 428 ft.

N. Y. O. Oil et al 5-J Thomas Brown, Jr., 5 bbl., Berea, T.D. 457 ft.

N. Y. O. Oil et al 3-N Thomas Brown, Jr., dry, Berea, T.D. 550 ft.

N. Y. O. Oil et al 5-N Thomas Brown, Jr., input well, T.D. 453 ft.

Preston Oil 3 Glen Garver, Tr. 16, Lot 14, 2 bbl., Berea, T.D. 412 ft.

Marine Trust 13-A Daniel Ross, Tr. 13, Lot 4, 5 bbl., Berea, T.D. 458 ft.

Marine Trust 18-A Daniel Ross, 5 bbl., T.D. 490 ft.

Marine Trust 32-O Daniel Ross, input well, T.D. 490 ft.

Marine Trust 37-O Daniel Ross, input well, T.D. 472 ft.

Meigs County

Rutland Township: Shuster et al 1 Virgil Nelson, Sec. 22, 200,000 cu. ft. gas, Macksburg 800 ft., T.D. 709 ft.

Monroe County

Franklin Township: J. E. Lumbatis et al 1 L. A. Booth, Sec. 24, dry, Berea, T.D. 1,891 ft.

Morgan County

Marion Township: Harris 2 William Bowman, Lot 7, 235,000 cu. ft. gas, Brill, T.D. 962 ft.

Windsor Township: Bachelor 1 E. McPherson, Lot 89, dry, Cow Run, T.D. 620 ft.

Muskingum County

Harrison Township: Mehowa Oil & Gas 1 O. W. Sullivan, Sec. 30, 800,000 cu. ft. gas, shot, Clinton, T.D. 4,200 ft.

Licking Township: Wilkins Oil 1 Frank Touch, fourth quarter, dry, Clinton, T.D. 3,252 ft.

Noble County

Beaver Township: Ohio Fuel 1 James H. Law, Sec. 29, 30,000 cu. ft. gas, Berea, shot, T.D. 1,704 ft.

Enoch Township: William Patten et al, Sec. 7, 70,000 cu. ft. gas, shot, Berea, T.D. 1,467 ft.

Peaker et al 1 John Hesson, Sec. 27, 50,000 cu. ft. gas, stray, T.D. 885 ft.

Stark County

Lake Township: J. C. Steiner 1 C. Ingold, Sec. 23, 410,000 cu. ft. gas, Clinton, T.D. 4,641 ft.

Tuscarawas County

Union Township: J. A. Upham 1 J. A. Long, NW SE Sec. 34, 175,000 cu. ft. gas, shot, Clinton 5,154-5,238 ft., gas at 5,213-16 ft (Big lime 3,450-4,990 ft., Newburg 4,700-12 ft., show gas), T.D. 5,256 ft.

Goshen Township: Penn Ohio 1 R. W. Rutledge, Lot 1, second quarter, dry, Clinton, T.D. 4,996 ft.

Washington County

Barlow Township: Campbell et al 1 A. H. Mercer, Sec. 11, 200,000 cu. ft. gas, Injun 1,508-12 ft., T.D. 1,515 ft. (stray sand gas at 1,184-1,210 ft. previously reported, blew out).

Fairfield Township: Fairfield Gas 1 L. G. Totman, 15,000 cu. ft. gas, Berea, plugged, T.D. 1,931 ft.

EASTERN KENTUCKY OPERATIONS

ASHLAND, Ky., Dec. 30.—Completion of one oil well, four gas wells and report of a dry hole marks eastern Kentucky operations this week. Other activities, affected by the usual holiday shutdown, show a slight slump but are expected to take a decided forward jump after the first of the year.

Estill County

Charles Cox 1 W. M. Cox, Sta Camp, 7 bbl. at 352 ft.

Alcorn & Marcum 1 Charley Hunley, Sta Camp, dry.

Floyd County

Kentucky W. Va. 602 W. D. Hall, Joe King Branch, in Floyd County, 73,000 cu. ft. gas, shale, R.P. 345 lb., T.D. 3,016 ft.

Kentucky W. Va. 5276 J. G. Carlisle, Cassady Branch of Coldwater Fork, 476,000 cu. ft. gas, R.P. 334 lb., shale, 2,915 ft.

Kentucky W. Va. 5278 William Slone, Caney Fork of Right Beaver Creek, 84,000 cu. ft. gas, R.P. 265 lb., shale 3,174 ft.

Kentucky W. Va. 5277 N. P. Harris, Long Branch of Calf Creek, 152,000 cu. ft. gas, R.P. 246 lb., shale, 2,742 ft.

WESTERN KENTUCKY

Daviess County

Utica district: J. C. Ellis 1 J. C. Ellis, 40 bbl., 3,000 gal. acid, McClosky 1,696-1,703 ft.

United Petroleum Co. 1 William Baird, 15 bbl., 2,000 gal. acid, McClosky 1,711-23 ft., T.D. 1,787 ft.

Hancock County

Saunders school district: W. J. Flesher 3 Quissenberry heirs, dry through Barlow sand, T.D. 502 ft.

McLean County

Island district: South-Penn 12 Alma Nall, dry, T.D. 1,468 ft.

Glenville district: Ohio 6 G. B. and R. L. McManama, dry, T.D. 1,896 ft., drilled deeper from Barlow through McClosky sand.

Muhlenberg County

South Carrollton district: Basin Drilling Co. 1 Nichols Bros., dry, T.D. 2,522 ft.

Ohio County

South Livermore district: Farmer, Hupp et al 3 Livermore Timber Co., 800,000 cu. ft. gas, Jett sand, 1,098-1,120, T.D. 1,438 ft., abandoned.

Oaks district: G. L. Krauss et al 7 J. W. Cheek, dry, T.D. 360 ft.

Ralph district: Globe 6 Ada Kelly heirs, dry, T.D. 873 ft.

INDIANA

EVANSVILLE, Ind., Dec. 30.—Indiana activity increased slightly during the holidays as 14 wells were completed. Of these, three were oil wells, three were gassers, and seven were dry holes. Gibson County had two oil wells with an initial production of 238 bbl., and Knox County had one oil well completed for 35 bbl.

Illinois Production Corp. 1 Larkin, a promising Posey County wildcat, was dry through the Cypress, McClosky, and St. Louis. This test, in NE NE SW 17-7s-14w, had previously found shows in the Pennsylvania and Tar Springs. Hole was bottomed at 3,005 ft.

INDIANA COMPLETIONS

Adams County

R. W. Hughes 1 fee ..... SW SE NE NW 24-26n-14e
Dry, T.D. 1,308 ft.

Decatur County

Hoosier Pub. Util. 219 Knapp ..... SW SW 12-9n-9e
107,000 cu. ft. gas, 120-qt. shot 875-916 ft., Trenton 875 ft., T.D. 916 ft.

Gibson County

Continental 19 Bozeman ..... NE SE NE 23-3s-14w
Pumped 130 bbl., natural, T.D. 2,534 ft.

Continental 11 Keck ..... NW SW SW 26-3s-14w
Pumped 108 bbl., perf. 2,501-03 ft., 2,547-56 ft., 2,559-64 ft., T.D. 2,606 ft.

Hamilton County

Hammer 1 Melson ..... NE SW SW 13-19n-3e
Dry, T.D. 992 ft.

Harrison County

Halbert & Schacklette 1 Wiseman .. SW SW NE 25-5s-3e
30,000 cu. ft. gas, 100-qt. shot 625-35 ft., Devonian 635 ft., T.D. 705 ft., P.B. 635 ft.

Ind. Pub. Util. 2 Erstaine ..... SE SW SW 32-3s-4e
90,000 cu. ft. gas, T.D. 745 ft.

Jay County

T. C. Weaver 1 Addington ..... SE NE NE 35-24n-12e
Dry, water 1,037 ft., T.D. 1,067 ft.

Knox County

H. K. Volkman et al 1 Louisville Bank .....
SW NE SE 18-2n-10w
Location abandoned.

Loma Oil 1 Sanneman ..... NW NW SE 24-2n-11w
Pumped 35 bbl., 2,000 gal. acid, pay 1,858-62 ft., T.D. 1,902 ft.

Posey County

Ill. Prod. et al 1 Larkin ..... NE NE SW 17-7s-14w
Dry, Menard 1,969 ft., Waltersburg 2,070 ft., Vienna 2,117 ft., Tar Springs 2,121 ft., show oil 2,121-27 ft., 2,131-34 ft., 2,142-55 ft., Glen Dean 2,266 ft., Hardinsburg 2,293 ft., Golconda 2,367 ft., Barlow 2,481-2,500 ft., shale and sandy shale 2,500-24 ft., Paint Creek lime 2,608 ft., Ste. Genevieve 2,817 ft., St. Louis 2,984 ft., no shows below 2,817 ft., T.D. 3,005 ft.

Spencer County

O. F. Kelly 1 Miller ..... SE SE NW 2-8s-7w
Dry, T.D. 1,745 ft.

Kelly et al 3 Niles ..... SW NE NE 2-8s-7w
Dry, T.D. 1,415 ft.

O. F. Kelly et al 3 Niles ..... NE SW NE 2-8s-7w
Dry, T.D. 1,400 ft.

INDIANA DRILLING REPORT

Daviess County

Newton P. L. 1 Brittain ..... NE NE SW 15-1n-5w
Drilling 3,145 ft.

Newton P. L. 1 Dorsan ..... NW SW SE 35-2n-5w
S.D. 1,888 ft.

Elkhart County

A. W. Downs 1 Harmon ..... NE NE SE 11-38n-4e
Set 8-in. 241 ft., S.D. 241 ft.

Gibson County

Hyslop et al 1 fee ..... NW NE NW 20-1s-9w
Set 12-in. 346 ft., H.F.W. 885 ft., drilling 942 ft.

P. W. Harr et al 1 Weber ..... NE NE SW 32-2s-9w
Set 6-in. 1,703 ft., S.D. 1,789 ft.

Oleum Pet. Co. 1 Bank ..... SE SE NW 5-2s-8w
Fishing 6-in. casing at 1,415 ft.

Papoose 1 Cooper-D ..... SW NE SE 5-2s-8w
Glen Dean 2,255 ft., Barlow 2,517 ft., no Cypress, fishing casing at 2,968 ft.

Greene County

Commonwealth 1 L. L. Tucker .. NE SE NE 16-6n-6w
Show oil 1,736 ft., S.D. 1,760 ft.

L. B. Jackson et al 1 Holmes .. NW NW NW 22-7n-6w
Gas 1,664-1,712 ft., H.F.W. 1,760 ft., S.D. 1,764 ft.

Huntington County

Beauchamp 1 Mayer Grain .. SE NW SW 22-29n-8e
Set 6⅝-in. 652 ft., 8¼-in. 159 ft., drilling 1,025 ft.

(Continued on Page 74)

Wasson Field Deep Discovery May Correlate With Tubb Pay

By R. MARNE SANFORD

MIDLAND, Tex., Dec. 30.—Almost 2 months ago a deep exploratory test in the center of the original Wasson field of northern Gaines County indicated a new and deeper pay level for the area. It was, itself, a projected 9,000-ft. test so another offset was chosen to be deepened to test the new level. During the past week this second deep test was finally and officially completed to open the first deep-pay level for the large two-county field.

The discovery was Amon G. Carter 5-D Wasson, Section 50, Block AX, P.S.L. Survey, in northern Gaines County and only 1¾ miles northeast of the same operator's original discovery well for the large 5,000-ft. field back in 1937. The new deep discovery was completed for a daily potential of 790 bbl. of oil from a pay section topped at 6,210 ft. and bottomed at 6,685 ft. Casing is set at 5,660 ft., through the regular Permian lime pay. Prior to completion the well was treated with a total of 18,000 gal. of acid in three stages and flowed 230 bbl. of oil through 2-in. tubing swung at 6,077 ft. on a 7-hour gage. Completion data on the well gave it a ratio of 675 to 1 with casing pressures registering 540 lb. and tubing pressures 250 lb., shut in. After the gage the pressures had dropped to 350 lb. on casing and 80 lb. on tubing.

Meanwhile the original deep test for the area, Carter 4-D Wasson, is drilling below 9,200 ft. at an unreported depth. Several shows below 6,800 ft. are credited to this deep exploratory hole. It has been recontracted to 10,000 ft. and all information is being withheld. It is a north offset to the new deep-horizon discovery of this week.

Accurate geological markers have not yet been released on the new deep well. However, the pay does correspond with the Tubb pay of western Crane County some 100 miles to the south. The pay is below the 5,300-ft. Holt lime pay on the northwest end of the North Cowden field in Ector County. The Holt lime is of the Clear Fork series of Permian while the regular Wasson field pay is from the Double Mountain series immediately above the Clear Fork. This correlation would place the new pay level in the lower part of the Wichita-Albany series immediately below the Clear Fork and at the base of the Permian age rocks. Tops of the markers found are not yet available.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Northern West Texas			
Oil wells	7	6,447	34,937
Dry holes	4	.....	19,151
Total	11	.....	54,088
Southern West Texas			
Oil wells: Ector County	7	7,376	28,329
Other fields	4	3,661	11,882
Total	11	.....	40,211
Texas Panhandle			
Oil wells	14	2,513	41,884
Dry holes	2	.....	9,892
Total	16	.....	51,776
Southeast New Mexico			
Oil wells	3	594	10,241
Recompletion	1	106	.....

Terry County Failure

A closely watched wildcat in the southwestern corner of Terry County was quit as dry the past week. It was Denver Producing & Refining Co. 1 Lewis, Section 62, Block DD, J. H. Gibson Survey. The total depth was 5,537 ft. with no shows reported.

Mitchell County

A new wildcat test for Mitchell County and on the Sharon field trend out of Scurry County was preparing to start at the close of the week. It is Peck & Croft and Ronald Jarrett (all of Midland) 1 Jack Smith, 467 ft. from the south and east lines of NW Section 19, Block 26, T.&P. Survey, 2½ miles north of Colorado City and 4½ miles south and 2 miles east of production in the Sharon Ridge field.

SOUTHERN WEST TEXAS COMPLETIONS

Crockett County

Noelke pool: Soma & Schooler 2 Noelke, flowed 100 bbl. in 5 min., top Yates 990 ft., T.D. 1,130 ft.

Ector County

Goldsmith pool: Gulf 326 Goldsmith, pumping 1,232 bbl., T.D. 4,233 ft.
Gulf 328 Goldsmith, pumping 891 bbl., T.D. 4,252 ft.
Gulf 329 Goldsmith, pumping 880 bbl., T.D. 4,183 ft.
Foster pool: M. K. B. Drilling 11-C Foster, flowing 659 bbl., 425-qt. shot, T.D. 4,307 ft.
Atlantic Refining 3-B Foster, flowing 936 bbl., 500-qt. shot, T.D. 4,130 ft.
Penwell pool: Cities Service 5-B University, 2,217 bbl., naturally, T.D. 3,559 ft.
Waldrop & Pattillo 2 McKenzie, flowing 561 bbl., T.D. 3,665 ft.

Ward County

Hutchins pool: Gulf 148 Hutchins, flowing 389 bbl., 740-qt. shot, 2,567-3,065 ft., T.D. 3,070 ft.

Winkler County

Scarborough pool: Richardson Oils 9-F Scarborough, flowing 201 bbl., 300-qt. shot, T.D. 2,900 ft.

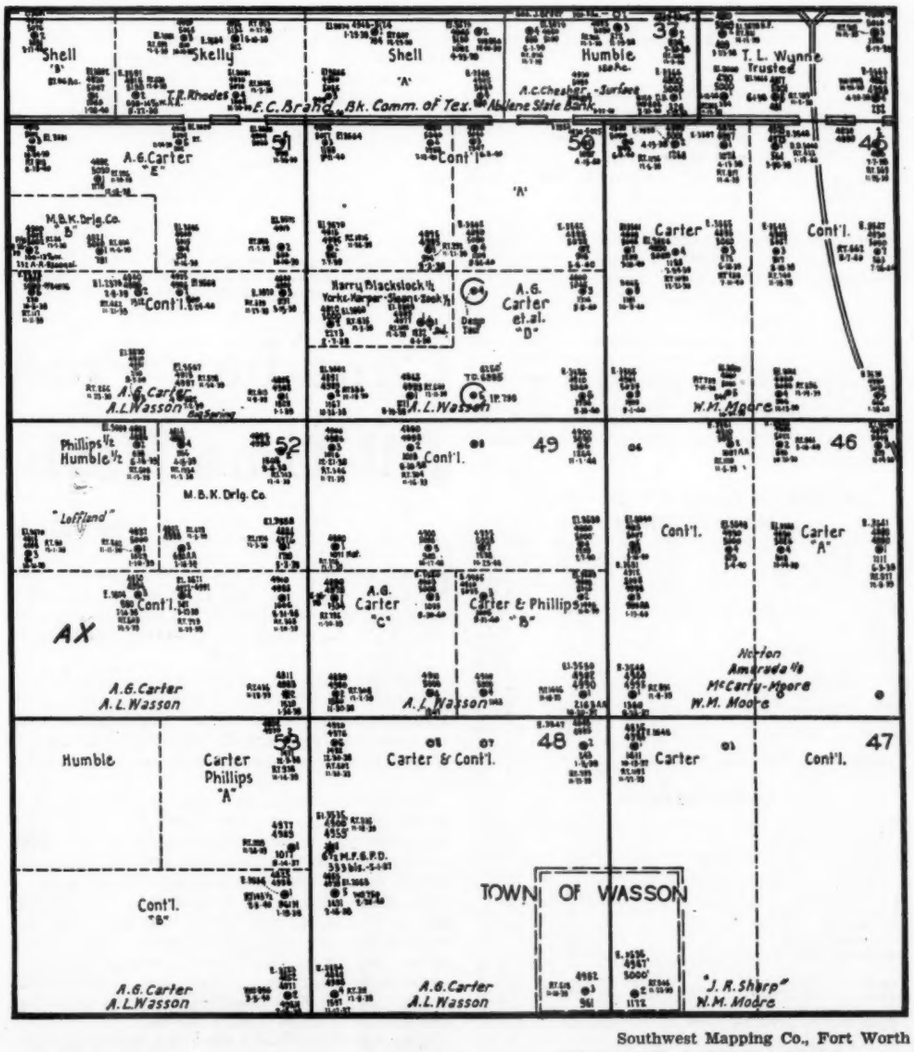
Pecos County

Apco pool: Humble 1 W. T. Shearer, flowed 71 bbl., 37 gravity, ⅛-in. choke, top Ellenburger 4,696 ft., T.D. 4,782 ft., P.B. 4,697 ft.

NORTHERN WEST TEXAS

New activity for the Noelke field of western Crockett County featured the week's work in the southern part of the West Texas district. One new well was completed in the field and a gas blowout at a test 1½ miles southeast of the field offered possibilities of a sizable extension. New operations for the field totaled four as the result of a recent farmout deal. The new completion was Soma Oil & Gas Syndicate 2 Noelke, a north offset to 1 Noelke which opened the Yates sand production

(Continued on Page 71)



Southwest Mapping Co., Fort Worth

The large Wasson field's two mystery tests are less of a mystery now with the official completion of Amon G. Carter 5-D Wasson for a new pay-level discovery rom 6,210-6,885 ft. The well made 790 bbl. daily. Just north of the discovery, 4-D Wasson is drilling ahead and reported to be below 9,200 ft. The new deep pay was first indicated by the latter well, No. 4-D, about 2 months ago

NORTH LOUISIANA, ARKANSAS

By GEORGE WEBER

Active Wilcox Play in North Louisiana Gains Momentum

SHREVEPORT, La., Dec. 30.—The brisk lease play extending across Louisiana continued this week and at least nine new locations are in prospect in wildcat territory shortly after the first of the year.

At the week's end 13 geophysical crews were reported active in the area despite the fact that shooting operations have met indifferent success in so far as the Wilcox play is concerned.

Absence of a hard substance such as anhydrite makes shooting less efficient. On top of this is the fact that correlating formations even in the Olla field is none too successful.

One of the largest lease deals of the week was from the State of Louisiana to Shell Oil Co., Inc., and from the state to Hunt Oil Co. Each operator acquired 4,000 acres of river bed and bottom lands in La Salle Parish.

Claiborne Parish Wildcats

A showing of gas believed to be in the Smackover lime was reported Tuesday at Union Producing Co.'s deep wildcat, 1-A Meadows, 18-21-4, Claiborne Parish. The test is north of the Lisbon field.

Operators decided to run casing at 10,403 ft. for a test and for protection.

It is understood the well will penetrate the 11,000-ft. horizon.

Other Active Tests

In De Soto Parish Southern Production Co. 1 Gannon, 11-16-16, was preparing to core at 4,809 ft.

Southern's other well in this field, 1 Alston, was preparing to resume drilling after trouble encountered around 2,592 ft. The test lost returns when a salt-water flow at that depth became strong.

Other active wildcats were Sinclair Prairie 1 Goodpine, NE SE 28-9-3, near which is drilling at 4,225 ft. Summerville and V. V. Ryan 1 Louisiana Central, NE NE 16-12-4, Caldwell Parish, which is preparing to drill under surface casing.

Sinclair Prairie leased approximately 700 acres in 27-9n-3e and 35-9-3 from Goodpine Lumber Co.

Acreage in Section 8 and 10-6n-3e was bringing from $10 to $25 an acre.

Leasing spread to the bed of Catahoula Lake in 19-6n-3e. Francis S. Barringer acquired some 600 acres in this area.

AVERAGE DAILY PRODUCTION

NORTH LOUISIANA

	Dec. 28	Dec. 21
Caddo, light	5,590	5,520
Caddo, heavy	2,170	2,130
Cotton Valley	13,600	13,575
Cross Lake	3,010	3,200
De Soto and Red River	1,000	1,005
Haynesville	2,640	2,650
Homer	2,675	2,675
Lisbon	2,975	2,800
Olla	8,500	8,400
Rodessa	17,010	17,175
Sligo	1,535	2,510
Sugar Creek	1,070	870
Urania	2,270	2,275
Zwolle	1,380	1,380
Total North Arkansas	67,940	68,690
Rodessa, Texas	14,400	14,375

SOUTH ARKANSAS

Atlanta	2,420	2,415
Buckner	2,010	2,025
Champagnolle	1,165	1,170
Dorcheat	1,280	1,275
El Dorado	1,625	1,630
Magnolia	19,410	19,400
Nick Springs	1,050	1,065
Rodessa	1,550	1,580
Schuler	16,500	16,375
Smackover, light	1,550	1,550
Smackover, heavy	13,600	13,575
Troy	1,130	1,125
Urbana	1,520	1,525
Village	1,005	970
Total South Arkansas	68,525	68,705

NORTH LOUISIANA COMPLETIONS

Olla—La Salle Parish

Placid Oil 52 Louisiana Central . . . . . NE SW 36-10-2
Flowed 8 bbl. an hr. through 13/64-in. choke from 2,220-26 ft.

Arkansas Fuel Oil 2-C Goodpine . . . . . NW NE 24-10-2
No gage available.

Wildcat—Claiborne Parish

Skelly 1 Volentine 31-20-3
Flowed 79 bbl. distillate from 6,507 ft.

ARKANSAS

A slight extension of the Buckner oil field and announcement of a new wildcat for Ashley County were uppermost in Arkansas oil activity this week.

J. W. Love 1 Eddy unit, 12-16-23, Columbia County, flowed 413 bbl. from 7,305 ft. The well is a townsite producer. The Buckner field is the oldest Smackover lime field in Arkansas. It now has 23 oilers.

Carter Williams assembled 4,113 acres centering around 23-16-8, Achley County. Leasing called for spudding a test by March 1 and for penetration to 5,000 ft.

Normandie Oil Corp. 1 Cornelius, NW SW 28-17-23. Lafayette County, in the McKamie gas-distillate area, loomed as the third producer for that section. Coring porous oolitic lime from 9,259-85 ft., the test prepared to drill plug Thursday. Casing was set to 9,340 ft. with total depth 9,365 ft.

A new Smackover lime wildcat has been announced for South Arkansas. It will be Turner & O'Farrell 1 Smart, SW SW 12-15-20, Columbia County.

Derrick is up and rig will be moved in. Crow Drilling Co. of Shreveport has the contract.

ARKANSAS COMPLETIONS

Columbia County

Buckner field: J. W. Love 1 Eddy unit, 12-16-23, flowed 413 bbl., ¼-in. choke, Smackover lime, T.D. 7,305 ft.

Union County

Urbana pool: Marine Oil 15-A Thompson, 3-18-13, 600 bbl. from 3,000 ft.
Nick Springs pool: Stacey & Erwin 5 Grace, 31-17-14, 50 bbl. from 3,700 ft.

EAST TEXAS BORDER

Two wells are testing in the Waskom field of Harrison County, Texas.

Arkansas-Louisiana Gas Co. was testing 1 Scott and Union Producing Co. perforated casing to test 1 Bryson at 6,150 ft.

In southwest Marion County J. D. Marson 1 Hooks was drilling past 4,758 ft.

Shelby County Gas Area

A new Paluxy gas zone was opened up east of Shelbyville in Shelby County, Texas, when Superior 4 Pickering, Crane Survey, made an estimated 8,000,000 cu. ft. of gas.

Casing was shot in the Paluxy which was topped at 3,678 ft.

Otis Seagraves and associates are reported trying to assemble a block of 1,500 acres for a Paluxy sand wildcat in Shelby County about 7 miles east of Joaquin.

The operators are leasing in and around Patterson and Castleberry surveys and are dealing with Pickering Lumber Co. officials for several tracts, reports said.

EAST TEXAS BORDER COMPLETIONS

Waskom—Harrison County

Arkansas-Louisiana Gas 1 Scott, Adams Sur., 4,500,000 cu. ft. gas.
Arkansas-Louisiana Gas 1-B Davis, 21,890,000 cu. ft. gas, 5,870-6,148 ft.

CANADIAN FIELDS

Canadian Production Reaches All-Time High in November

By VICTOR LAURISTON

CHATHAM, Ont., Dec. 28. — Crude and naphtha production from all Alberta fields in November reached an all-time high of 877,165 bbl. compared with 799,025 bbl. in October. The previous record figure was 877,005 bbl. in July 1939.

With December figures still to come, Alberta production for the 11 months of 1940 has reached 7,770,413 bbl., an excess of 661,620 bbl. over the corresponding period last year, and the total for the 12 months of 1940 is expected to reach a new high of 8,400,000 bbl.

Turner Valley limestone crude in November was 839,447 bbl. compared with 767,080 bbl. in October. Production from limestone gas wells was up from 4,881 to 5,326 bbl., and natural gasoline from 21,813 to 26,978 bbl. Shallow crude declined from 609 to 505 bbl.

Red Coulee light crude dropped from 1,049 to 988 bbl. and Wainwright heavy crude from 696 to 615 bbl. The Dina-Ribstone field, with two wells, increased from 487 to 1,800 bbl. and the Vermilion field was up from 910 to 1,178 bbl., with two wells now in production. Lloydminster field produced 128 bbl. and the Del Bonita wells in southern Alberta 200 bbl.

In Turner Valley Home Oil 2 was the largest producer with 33,109 bbl. Alberta Oil Incomes 2 ranked second with 27,310 bbl. and Home 3 was third with 26,986 bbl. Alberta Oil Incomes 1 came fourth with 22,147 bbl. All are in North Turner Valley.

New wells in production for the first time included Allied Royalties 1, with 2,963 bbl.; Arrow Royalties 2, with 9,966 bbl.; Calmont-Northwest 2, with 17,776 bbl.; Foothills Oil & Gas 5, with 17,672 bbl.; Home Oil 5, with 7,098 bbl., and Twin Valley Syndicate 1, with 9,633 bbl.

Turner Valley Completions

North Turner Valley: Foothills Oil & Gas 7, LSD 4, 27-20-3w5, flowed 75 bbl. an hr. after 5,000 gal. acid, 608 ft. in the lime, at 8,588 ft., T.D.
Southwest field: Pacific Petroleums 4, LSD 3, 32-18-2w5, flowed 30 bbl. an hr. with 175 lb. back pressure, gas-oil ratio of less than 1,400 cu. ft., and is continuing official tests, 8,019 ft., T.D.

Tests in the Lime

North Turner Valley: Home Oil 1, LSD 8, 33-20-3w5, will complete below 8,010 ft., Madison 7,455 ft.
Home Oil 6, LSD 8, 28-20-3w5, lime 7,988 ft. and is deepening below 8,047 ft.
Southwest field: Commoil 4, LSD 9, 29-18-2w5, Madison 6,867 ft., deepening below 7,116 ft.

New Tests Starting

North Turner Valley: Royalite Oil 56, LSD 13, 14-20-3w5, digging cellar.
Home Oil 9, LSD 9, 15-19-3w5, derrick.
Home Oil 8, LSD 16, drilling below 475 ft.
Royalite Oil 47, LSD 15, drilling below 78 ft.
Ace Royalties 1, LSD 5, 4-21-3w5, building derrick, will use rig from Commoil 4.
Major Oils 2, LSD 12, building derrick.

(Continued on Page 74)

Second Hiawatha Pay Found; Cut Bank Gets Good Well

By T. R. INGRAM

DENVER, Colo., Dec. 30.—Operations in the Rocky Mountain area over the holiday period showed few developments of importance. A large well for the Cut Bank sand was completed in the Cut Bank field in Texas 9 State which flowed and swabbed 410 bbl. in 18 hours and then 672 bbl. in 24 hours. Texas Co. had two other completions in 6 fee for 127 bbl. and 2 Kneale with 476 ft. of oil in the hole. Kevin-Sunburst had one completion in C. L. Mills 2 Government for 105 bbl.

Vermillion Oil Co. 1 Horrocks, which extended the Hiawatha gas field a mile on the Wyoming side weeks ago, was deepened 36 ft. and picked up a second sand which, with the first sand, made 8,600,000 cu. ft.

New operations included two for Sinclair-Wyoming in the Wertz field, Carbon County, Wyoming, one for the same company at Mahoney dome, and one for the same company at Lost Soldier; a wildcat to be drilled 5 miles southeast of Lance Creek by the Western Petroleum Co.; one in Lance Creek for the Ohio Oil Co.; nine in the Cut Bank field in Montana, and three in Kevin-Sunburst.

SUMMARY OF COMPLETIONS

Montana

	No.	Bbl.	Footage
Oil wells: Cut Bank	3	824	8,949
Kevin-Sunburst	1	105	1,639
Total	4	929	10,588

Northwest New Mexico

Dry holes	1	.....	1,287

Wyoming

Oil wells: La Barge	1	44	1,077
Recompletions	1	*8.6	.....

*Million cu. ft.

COLORADO

Boulder County

Bartson Oil 1 Chenburg.....SW SW SE 15-2n-70w
Ready to spud.
J. A. Warren 3 Maxwell.....NW NE NW 24-1n-71w
T.D. 975 ft., cleaning out at 900 ft.

Fremont County

U-Tex Oil 1 Hassler.....NE 28-20s-69w
Drilling 2,965 ft., 1,000 ft. oil in hole.

Huerfano County

I. E. Sideman-White 1-X Martinez C SW NE 33-26s-67w
Drilling 1,467 ft. in new hole.

Garfield County

Joe T. Juhan 1 Clough ..... C NW SE 22-6s-94w
Cemented 13⅜-in. on bottom at 570 ft. and S.D.

La Plata County

Nick Spatter 1-X Bryce.....SW SW 31-33n-9w
Resumed drilling at 4,390 ft. after building heavier rig to test Pennsylvanian.

Larimer County

E. P. Gallup 1 Hanson.....C SE NW 36-10n-71w
T.D. 320 ft., underreaming to shut off water at 312 ft.

Las Animas County

Barney Oil Corp. 1 Dutto-Marchisio.....
NW NW 32-33n-62w
Drilling 362 ft.

Logan County

West Plains 1 Sheldon ..... SE NW SW 3-10n-55w
Drilling 3,312 ft. in shale.

Park County

South Park Oil 1 Lamar .....NE NE SE 34-11s-75w
Drilling 7,647 ft. in sand.

Rio Blanco County

Texas-California 5 Unit ..... NW NE NE 34-3n-94w
Drilling 4,100 ft.
Buford Oil 1 Government ..... SW SW 16-1n-91w
T.D. 4,387 ft., recemented 6⅝-in. at 4,206 ft.

Routt County

Mid-Colorado Pet. 1 Omholt ... NE NE SE 29-4n-87w
T.D. 3,160 ft., 2,600 ft. water in hole, preparing to test oil show at 3,135 ft.
Craig-Moore 1-X Irwin ..... C SW NE 33-7n-85w
Deepened to 2,530 ft. in red beds and S.D. for repairs.

WYOMING

Big Horn County

McDonald & Curtis 1 Orchard .... SE NW 24-51n-93w
Drilling 1,465 ft., deep test Torchlight field.

Carbon County

Carbon County is now the most active district in Wyoming as a result of the inauguration of a development campaign by the Sinclair-Wyoming Oil Co. in the Wertz field, where six wells are under way.

Sinclair-Wyoming 19 Wertz.....SE SW SW 6-26n-89w
Cellar, first report.
Sinclair-Wyoming 20 Wertz.....NE SW NE 7-26n-89w
Cellar, first report.
Sinclair-Wyoming 4-F Mahoney C SW NW 34-26n-88w
Drilling 620 ft., 20-in. at 35 ft., first report, Mahoney dome.
Robinson & O'Donnell 1 State SW SW NE 16-26n-89w
Drilling 1,500 ft., cemented 13⅜-in. at 290 ft.
Sinclair-Wyoming 2-A Mahoney C SW NE 34-26n-88w
T.D. 4,507 ft., cleaning out at 4,365 ft.
Sinclair-Wyoming 18 Wertz.... SE SE NW 7-26n-89w
Drilling 645 ft., 13⅜-in. at 406 ft.
Sinclair-Wyoming 17 Wertz....NE NE NW 7-26n-89w
Drilling 2,834 ft., 13⅜-in. at 400 ft.
Sinclair-Wyoming 16-A Wertz SW SW SW 6-26n-89w
T.D. 5,855 ft., 7-in. at 5,851 ft., top Tensleep 5,849 ft.
Ohio 2 Lundy ..... SE NE NW 34-20n-78w
T.D. 4,210 ft. in Dakota sand, cementing 7-in. at 4,182 ft.
Sinclair-Wyoming 15-A Wertz..SW SW NE 7-26n-89w
Drilling 4,223 ft.

Crook County

Vickers Petroleum-Continental 1 Duncan-Lobban, NE NW SW 28-57n-64w, Government Canon district, cemented off water with the 7-in. at 2,006 ft., and deepened hole to 2,211 ft. in red sand, and shut down for orders.

Hot Springs County

Oscar B. Grace 3 Government NW NW NW 21-43n-92w
T.D. 420 ft., top Frontier 410 ft., show oil at 413 ft. tested 2 bbl., testing.

Niobrara County

Western Petroleum Co., in which Terry Carpenter, Nebraska refiner and operator of service stations in Colorado, is interested, has let contract to Julius Stoins & Sons for a test on the Dakota high structure, 5 miles southeast of the Lance Creek field, and is moving in combination rig. Geology is by Dr. Harold J. Cook, Agate, Neb., and soil survey by Arthur F. Scott, chemistry professor at Reed College, Portland, Ore. Acreage was assembled by F. S. McCaffree, Scottsbluff, Neb. Top of the Leo horizon is expected at around 1,975 ft. Location is 2¼ miles west and ½ mile south of the Cow Gulch Oil Co. 1 Magoon, which was drilled to the base of the Leo at 2,075 ft. in 1938. The company is financed mostly by Portland business men.

Ohio Oil Co. 18 Elizabeth Lamb, SE SW NE 5-35n-65w, Lance Creek, reported a completion last week, made 1,800 bbl. in 24 hours from the first and second benches of the Leo on official gage.

Western Petroleum 1 Mosier..... SW SW 31-35n-64w
Moving in, first report, Dakota high.
Ohio 9 Agnes Rohlff .....SE NE SE 32-36n-65w
Location, first report.
Minnelusa Oil Corp. 4 Joss .... SW NE SW 6-35n-65w
T.D. 5,306 ft., top Leo 5,302 ft., cemented 7-in. at 5,299 ft.
Continental 22 Tom Bell..... SE NW NW 34-36n-65w
T.D. 5,326 ft., swabbed 7 bbl. per hr. at 5,324 ft., testing.
Continental 23 Tom Bell.....SE NW SW 34-36n-65w
T.D. 5,486 ft. in water sand, P.B. to 5,350 ft.

Park County

Continental 2 Northern Pacific NE NW NW 23-58n-98w
T.D. 3,659 ft., testing, swabbed 300 bbl. in 15 hr., then 277 bbl. in 12 hr.
Resolute 2 State.....SW SW 16-57n-101w
T.D. 10,121 ft., set whipstock at 7,393 ft., and after redrilling to 7,408 ft., preparing to reset whipstock.

Platte County

Dividend O. & R., Inc., 1 Johnson
CSL NW SW 17-24n-66w
Drilling 3,770 ft. (corrected) in gray shale.

Sublette County

Texas Co. 1-I Government, SW NW SW 27-27n-113w, La Barge field, was completed at 1,077 ft. for 44 bbl. in 24 hours through ⅛-in. choke on the tubing from the second sand. It made 120 bbl. through the open tubing.

Klumpe Syndicate 1.....NE SW NE 28-27n-113w
Spudded to 80 ft., set casing and S.D.
Texas 1-C Government....SW NW NW 24-27n-113w
Location.
Texas 1-J Government.....NW SW SW 27-27n-114w
Spudded.
Marvel Oil 6 Government... CEL SE SE 28-27n-113w
Rigging up.
North La Barge Oil 6 Govt. CNL SE NE 28-27n-113w
Drilling 1,120 ft., cemented 6⅝-in. at 1,030 ft.

Sweetwater County

Vermillion Oil Co. 1 Horrocks, SW SW SW 7-12n-99w, which was reported a completion 2 weeks ago at 3,504 ft. for 3,000,000 cu. ft. of gas a day, and which is located a mile north of nearest production in the Hiawatha field, was deepened to 3,540 ft. Another gas sand was picked up at 3,505-40 ft. The two sands on preliminary test made 8,600,000 cu. ft. in 24 hours. It is running tubing for official test.

Sinclair-Wyoming 95-A.....SW NW NW 11-26n-90w
Rig, first report, Lost Soldier field.
Rocky Mountain Drlg. 1 State SW SW SW 36-20n-104w
Drilling 2,250 ft., cemented 11-in. at 200 ft.
Sinclair-Wyoming 97-A ..... NW NW SW 11-26n-90w
T.D. 505 ft., reaming.

Uinta County

Meridian Oil 2 Pat. ..... NW NW NE 26-13n-119w
T.D. 1,015 ft., trying to shut off water with 6¼-in. and test show oil at 1,012 ft.

Weston County

Riggs Oil Co. 4 State ..... CNL NE SE 16-46n-64w
Drilling 3,135 ft., carrying 6⅝-in. at 3,050 ft., 8¼-in. cemented at 2,235 ft.

MONTANA

Big Horn County

Massey Oil & Gas 1 Government..SE SW SE 11-2s-31e
Drilling 2,008 ft. in Dakota.

Blaine County

Cherry Ridge Synd. 1 Harbolt . NW NW SW 1-35n-20e
Landed 10-in. at 1,220 ft., for formation shutoff.

Carbon County

Miracle Oil Co. 2 Government . CWL NE SE 3-6s-23e
T.D. 2,338 ft., reaming to set casing on bottom.

Glacier County

A record well in the Cut Bank sand in South Cut Bank was completed in Texas 9 State, C NW NE 16-32n-5w, which swabbed and flowed 410 bbl. first 18 hours and then made 672 bbl. in the next 24 hours, at 3,056 ft., total depth. The Cut Bank sand was at 2,998-3,047 ft. and oil rose 2,000 ft. from the main pay at 3,036-47 ft.

Texas 6 fee, 660 ft. north of south cor. 15-35n-6w, was completed at 2,917 ft., total depth, and swabbed 127 bbl. first 24 hours from the Cut Bank at 2,886-2,907 ft. The main pay was at 2,898-2,907 ft. The Sunburst at 2,842-62 ft. had a show at 2,852-62 ft.

Texas 2 Kneale, C NE NW 14-35n-6w, had 476 ft. of oil in the hole at 2,976 ft., but was not given a swabbing test. The upper Cut Bank was at 2,900-66 ft. and lower Cut Bank was missing.

Kately, agent, 1 Hagerty.....SE NE NW 15-34n-6w
Rig, first report.
Texas 1 Lander..... C SE NE 20-35n-6w
Location, first report.
Texas 2 Aronson .....C NW SW 21-35n-6w
Location, first report.
A. P. Consolidated 5 Keisel ... SE SE NW 11-34n-6w
Rig, first report.
Frank Henderson 1 Tribal-190 NW NW NW 29-32n-5w
Rig, first report.
Dakota-Montana 2 Tribal..... SW SW SW 15-34n-6w
Rig, first report.
Santa Rita 1 fee .....C SE SE 25-34n-6w
Cemented 10¾-in. 575 ft., Colorado 520 ft., first report.
A. B. Cobb 7 Farmers State Bank NE NE SE 17-33n-5w
Spudded, first report.
Glacier Prod. 2 Winkler ..... C NE SE 28-33n-5w
Spudded, first report.
Glacier Prod. Co. 3 Lookhoff NW NE NE 33-33n-5w
Drilling 2,330 ft., top Colorado 580 ft., 10¾-in. cemented at 597 ft.
Consolidated Gas 1 Frary-Tribal NW NW SE 19-32n-5w
Spudded.
Steel Creek Oil 4 Carmen .... SW SW NE 19-34n-5w
Drilling 1,405 ft., top Colorado 420 ft., 8⅝-in. 440 ft.

Toole County

The only completion in Kevin-Sunburst was C. L. Mills 2 Government, SE NE SE 8-35n-2w, which made 105 bbl. first 24 hours at 1,639 ft., total depth, after acidizing with 500 gal. The contact was at 1,630-36 ft.

(Continued on next page)

Major Extension Indicated For Agua Dulce Field

By
F. L. SINGLETON

CORPUS CHRISTI, Tex., Dec. 30.—McSpadden Co. et al 1 E. Clark, a wildcat 8½ miles south of Port Lavaca, Calhoun County, was holding the attention of Southwest Texas operators as preparations were made for a production test. The hole is bottomed at 6,240 ft. and casing was cemented following an electrical survey which is reported to have shown favorable indications. Sand showing gas in the Frio formation was cored the previous week at 5,997-5,813 ft. The well is located in the Thomas Hennessee Survey, about 7 miles northeast of the Duck Bay field. It was drilled on a farmout lease from the Coronado Corp. in an area which has been worked with geophysical instruments.

In Nueces County, a major extension to the newly opened play on the southeast flank of the Agua Dulce field was indicated as preparations were made to test S. E. W. Oil Co. 2 Pfluger, located about 1 mile south of production in Section 186, Bishop Palo Alto subdivision. Casing was cemented on bottom at 7,143 ft., and the well will test sand at 6,976-7,018 ft., where two drill-stem tests showed gas and an unestimated amount of distillate. Another producer was promised the area as Burwyn Oil Corp. 1 Purl, Section 7, Block 4, Ross Peters subdivision, recovered several hundred feet of pipe-line oil on a drill-stem test at 6,477-89 ft. Several new operations are being started and this area is expected to become one of the most active in the district. The Texon Royalty Co. is starting three new tests, while Richardson Petroleum Co. started drilling operations at 4 McCoy, located 1,310 ft. northeast of 3 McCoy, a recent completion.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Lower Gulf Coast District			
Oil wells: Ben Bolt	2	730	10,532
Wade City	3	293	14,499
Agua Dulce	1	100	7,170
Other fields	4	278	20,970
Total	10	.....	53,179
Laredo District			
Oil wells: Colorado	1	148	2,944
Other fields	4	158	5,405
Dry holes: Wildcats	1	.....	4,516
Total	6	.....	12,865
San Antonio District			
Oil wells: Fields	3	321	5,543
Dry holes: Fields	1	.....	1,072
Wildcats	3	.....	7,557
Total	7	.....	14,172

East Premont Extension

Magnolia 14 Seeligson, 1 mile north of production in the East Premont field, Jim Wells County, flowed 264 bbl. per day on an 11/64-in. choke. Tubing pressure was 1,650 lb., and casing pressure 1,975 lb. This well topped the pay at 6,625 ft., and was completed through perforated casing at 6,625-27 ft.

In the McFaddin field, Victoria County, Transwestern Oil Co. was opening gas production from a new sand horizon as 18-E McFaddin was flowing gas from perforated casing at 5,115-20 ft. The well is located as a north offset to the company's 14-E McFaddin in the F. Lewers Survey.

Gulfboard Oil Corp. 1-239 State, located on the Mud Island prospect, offshore from Aransas County in Aransas Bay, has been killed and is scheduled to be recompleted the first of the week. The well flowed gas and an unestimated amount of high-gravity oil from perforated casing at 9,210-16 ft., but began to make mud from a faulty cementing job at 9,126-32 ft. In St. Charles Bay, approximately 1 mile offshore, Humble 1-27 State is coring in shale below 5,640 ft.

Location for an interesting wildcat was announced for San Patricio County by Arkansas Fuel Oil Co. The well is located on the Kellerman lease about 3 miles north of Mathis.

Fagan Field Outpost

An extension to the Fagan field, Refugio County, was assured by Barnsdall Oil Co. 4 Marberry, which is preparing to run casing for a production test after a 28-minute drill-stem test at 5,630-38 ft., recovered 3,870 ft. of pipe-line oil. The well is located in the N. Fagan Survey, about 2,500 ft. west of the discovery well.

Magnolia Petroleum Co. is believed to have opened a new field or an important extension to the Casa Blanca field with the completion of 10 Duval County Ranch Co., which was completed for an initial production of 75 bbl. per day through a ¼-in. choke from sand bottomed at 1,550 ft. The well is located in the G.C.&S.F. Survey 290, about 7,500 ft. northwest of production.

In Starr County and located about 1 mile south of the Ricaby field, H. C. Bishop et al opened a shallow gas field with the completion of 1 S. B. Ricaby which flowed 750,000 cu. ft. of gas per day through a ⅛-in. choke from perforated casing at 1,440-56 ft. Location is in Block 13, Porcion 81, about 5½ miles northeast of Rio Grande City.

Pan American production announced location for another test in the newly opened Willamar area, Willacy County. The well is 1 G. C. Kent, located northwest of the discovery well in Share 13, San Juan de Carricitos grant. Drilling operations throughout the Rio Grande Valley area were closed down most of the week due to a 9-in. rain, and drilling had not been resumed at the close of the week.

In the Mountain View field, Live Oak County, Sal Vieja Oil Co. 2 Riser & Rosenthal, an outpost well, showed oil and salt water through perforated casing at 2,115-24 ft., and the company was preparing to test at approximately 2,400 ft.

Producers Corp. 1 S. E. McKnight, located 5 miles west of Carrizo Springs, Dimmit County, is drilling below 2,200 ft., after the well showed for a gas production at 1,700-07 ft. The well tested 200 lb. working pressure and 45 ft. of gas-cut drilling mud.

A second producer was being completed in the new Nichols field, 1 mile east of the Samfordyce field, Hidalgo County, as casing was cemented for completion in Baldridge & King 1 Yturria Town & Improvement Co. Sand was cored at 3,481-3,521 ft., and on a 15-minute drill-stem test at 3,505-13 ft., several hundred feet of oil was recovered. Phillips Petroleum Co. entered the field with the purchase of a 290-acre block of lease from Baldridge & King.

The Tinney Creek field in Caldwell County looms as one of the most important fields to be uncovered in the Balcones fault-line district during the year as Wiegand Brothers 1 Freeman estate, 1 mile north of the discovery well, topped the Austin chalk at 2,450 ft. and 7-in. casing was cemented after the hole had been drilled to a total depth of 2,490 ft.

SOUTHWEST TEXAS COMPLETIONS
LOWER GULF COAST DISTRICT

Jim Wells County

Ben Bolt field: Bridwell 5-B Hoffman, 333 bbl., ¼-in. choke, perf. casing 5,255-60 ft., T.D. 5,261 ft.
Bridwell 6-B Hoffman, 397 bbl., ¼-in. choke, perf. casing 5,247-55 ft., T.D. 5,271 ft.
Sandia field: O. W. Killam 14 Wade, 3 bbl., 3/32-in. choke, perf. casing 3,911-16 ft., T.D. 5,254 ft.
Wade City field: Anderson-Prichard 9 Mueller, 165 bbl., 9/64-in. choke, perf. casing 4,901-03½ ft., T.D. 4,904 ft.
Henshaw 5 Wendt, 88 bbl., ⅛-in. choke, perf. casing 4,793-94 ft., T.D. 4,795 ft.
Lewis Production Co. 1 Stech, 40 bbl., 5/64-in. choke, perf. casing 4,797-99 ft., T.D. 4,800 ft.

Nueces County

Agua Dulce field: Richardson 3 McCoy, 100 bbl., ¼-in. choke, perf. casing 6,415-40 ft., T.D. 7,170 ft.

Refugio County

Refugio field: Ce-Beth Oil Co. 6-B Mitchell, 20 bbl., ⅛-in. choke, perf. casing 6,282-90 ft., T.D. 6,855 ft.

San Patricio County

East White Point field: Republic 39 Rachal, 143 bbl., ⅛-in. choke, perf. casing 5,577-94 ft., T.D. 5,808 ft.

Victoria County

Victoria field: Magnolia 2 Simon, 112 bbl., pumping, perf. casing 3,056-59 ft., T.D. 3,061 ft.

LAREDO DISTRICT

Duval County

Cedro Hill field: Magnolia 19 Duval County Ranch Co., 32 bbl., ⅜-in. choke, sand 1,464-72 ft., T.D.
Hoffman field: Cuellar Brothers 3-C Cuellar, 50 bbl., jetting, perf. casing 2,633-42 ft., T.D. 2,888 ft.

Jim Hogg County

Colorado field: Humble 4-B King ranch, 148 bbl., ¼-in. choke, T.D. 2,944 ft.

Starr County

Wildcat: Baldridge & King 1 Garcia Land & Livestock Co., dry, T.D. 4,516 ft.

Zapata County

Escobas field: Dulup Oil Co. 2-C Garcia, 76 bbl., pumping, sand 1,026-45 ft., T.D.

SAN ANTONIO DISTRICT

Bastrop County

Wildcat: Marts & Beaven, dry, T.D. 1,700 ft.

Bexar County

Gas Ridge field: Roger Putnam 3 Barker, gas well, sand 347-50 ft., T.D. 493 ft.
Wildcat: T. O. Woodruff 1 Goeth, dry, T.D. 615 ft.

(Continued on next page)

Rocky Mountain Area

(Continued from preceding page)

High Gravity Oil Prod. 1 Govt. SE NW NE 19-35n-3w T.D. 470 ft., running 10-in., first report.
Tolis Drilling Co. 2 Nicholson..NW SE NE 28-35n-3w Rig, first report.
Hannah-Porter 1 Donovan.....C SW SE 8-33n-1w T.D. 100 ft., first report.
S. T. Scotland 4 McNamoar....CNL NE SW 29-35n-3w S.D. 1,779 ft., contact 1,776-79 ft., will acidize.
Twinfields Oil 3 Thompson....NW NW SE 28-35n-3w T.D. 1,760 ft., show oil and gas followed by water, acidized with 500 gal. after P.B. to 1,745 ft.
Kevin Oil 4 Leach.....C SE NE 31-35n-3w T.D. 1,669 ft., cemented 7-in.
R. G. Parrant 1 Holbrook.....C NW NE 2-36n-3w S.D. 1,650 ft.
Montana Gas Corp. 1-X Nelson CNL SE NE 12-35n-1e S.D. 2,133 ft.
A. A. Welch 2 Lerum.....SE SW NW 25-36n-2w T.D. 1,658 ft., contact at 1,641-58 ft.

NORTHWEST NEW MEXICO

Bernalillo County

David H. Boyd 1 Wright.....11-10n-5e Ready to spud.

McKinley County

Ambrosia Investors Co., Inc., 1 Govt. SE SE 11-14n-10w T.D. 1,600 ft., underreaming 8-in. from 1,362 ft. to bottom.

Rio Arriba County

E. B. McKenna 1 Government-Rath, Unsurveyed 29-26n-2e, Gallina Mountain structure, is an abandoned location.

San Juan County

San Juan Oil & Gas 2 Government, NW NW SW 18-29n-11w, Bloomfield district, is reported abandoned without plugging at 1,287 ft., total depth.

Red Cactus Oil 1 Tribal.....SE cor. 35-29n-18w Drilling 950 ft.

San Miguel County

Southwest Drilling, Inc., 1 Conchas NW NE 34-17n-21e Recementing 8¾-in. at 2,635 ft.

Torrance County

Orville J. Lee 1 C. M. Milburn is rigging up at a location 1½ miles north of his 1 Pace, NW NW SW 12-6n-7e, completed in 1939 at 1,950 ft. for 50,000 cu. ft. of carbon dioxide gas.

Orville J. Lee 1 Milburn.....C NW SW 36-7n-7e Rigging up, first report.
J. P. Stewart 1 Laman.....C NW NE 3-3n-12e Drilling 710 ft.

UTAH

Box Elder County

Northern Oil 1.....NE SW 17-13n-4w Resumed at 386 ft. and drilling ahead at 475 ft.

Summit County

Longwell Pet. Co. 1.....SE SW SE 35-3n-5e S.D. 3,525 ft. for drilling line after setting 4¾-in. at 3,492 ft.

LOUISIANA GULF COAST

Blowout at Edgerly Indicates First Deep Production

By F. L. SINGLETON

NEW ORLEANS, La., Dec. 30.—An attempted blowout of a deep test on the southeast flank of the Edgerly field, Calcasieu Parish, a new sand discovery in the South Crowley field, Acadia Parish, and the announcement of three more wildcat operations marked up an interesting week of developments in the Louisiana Gulf Coast district the past week.

Gulf 1 Miller, a southeast-flank test at the Edgerly field, Calcasieu Parish, showed promise of opening the first deep production for the structure when it blew out through the drill stem and flowed mud, gas and a slight amount of 19.9-gravity oil. The hole bridged over shortly afterwards and the company is trying to recover the drill stem which became stuck when the hole bridged. The hole is bottomed at 7,555 ft., and the approximate top of the sand section was logged at 7,545 ft. Edgerly is one of the oldest fields in the district and although several attempts have been made to open flank production, none were successful. Production is from shallow sand on top of the structure.

Shallow Sand at South Crowley

Interest in the South Crowley field, Acadia Parish, was revived with the opening of production from a shallow sand by the completion of Humble 2 Leger. Originally completed through perforated casing at 8,917-22 ft., the test flowed at the rate of 475 bbl. per day, but salt water broke in, and at the time the well was killed for reworking, it was making approximately 90 per cent salt water. The well was recompleted through perforated casing at 5,920-28 ft., and on a recent gage it was flowing at the rate of 7 bbl. of 30.1-gravity oil per hour through a 9/64-in. choke. This is the shallowest of three sands. The discovery well, 1 Leger, is flowing from sand at 7,600 ft., while 1 Freeland, ⅛ mile southeast, was recently completed in a new sand at 7,000 ft.

Locations for two more wells were staked in the shallow Ritchie field, Acadia Parish, which recently received its first commercial crude production. H. L. Carnahan staked location for 1 Sittig in 17-7s-1w, while Bering Oil Co. is moving in material for 1 School Board, ¼ mile northwest of the discovery well in 16-7s-1w. Vincent and Welch et al 1 Hayes, a west offset to their gas and distillate producer, has been completed for an initial production of 150 bbl. per day from sand bottomed at 3,514 ft.

In the Iowa field, Calcasieu and Jefferson Davis parishes, Magnolia 16 Wait, perforated casing at 8,257-67 ft., and is flowing 153 bbl. of oil plus 20 per cent brackish water per day through a 12/64-in. choke. Tubing pressure was 650 lb. and casing pressure 1,600 lb. The well is expected to be killed and recompleted.

Wildcatting on Increase

Wildcatting throughout the district continues to show an increase and all indications point to an active drilling program shortly after the first of the year. New operations reported during the week included Amerada 1 Wilberts Minerals Corp., located in the West Baton Rouge Parish. The well is situated in the Port Allen area in 26-7s-11e. The company controls a block of several thousand acres which has been worked extensively with geophysical instruments. Several major companies hold protection acreage around the proposed well.

In St. Martin Parish, and located in Duck Lake, Shell Oil Co., Inc., is moving in material for 1 State, located 2,200 ft. west and 440 ft. south of the NE cor. of 1-15s-11e.

In the Lake Penchant area, Terrebonne Parish, Stanolind Oil & Gas Co. staked location for 1 Continental Land & Fur Co., in 11-18s-4e, and drilling is scheduled to be started after the first of the year.

An east extension of approximately 800 ft. was indicated for the Schooner Bayou field, Vermilion Parish, as Union Oil Co. of California 1-B Vermilion School Board topped sand showing gas and distillate at 10,455 ft., and the well is coring ahead in sand below 10,483 ft. The sand section was topped at approximately the same level as the discovery well, and the present showing is believed to be in the top part of the section.

Lake Hermitage Deep Test

In Lake Hermitage field, Plaquemines Parish, Gulf Refining Co. is reported to be preparing to make a production test of a deep sand cored in 12 La Fourche Basin Levee district. The well was drilled to a total depth of 9,775 ft., and the well is expected to test at approximately 9,100 ft. Development at this dome has been discouraging, and the outcome of the present well is being watched with much interest.

A major extension was recorded for the Wilcox pay in the Ville Platte field, Evangeline Parish, as Continental Oil Co. completed 1 Evangeline Securities Co. for an initial production of 332 bbl. per day through ⅛-in. choke. Tubing pressure was 2,500 lb. and casing pressure 2,650 lb. The well was drilled to a total depth of 10,125 ft., and was completed through perforated casing at 9,845-80 ft. The Wilcox was topped at 9,768 ft. Located 1 mile southwest of production, the well opens more than 600 additional acres for development.

Barnsdall 2 Nelson, located on the Point Au Fer prospect, Terrebonne Parish, is drilling below 11,000 ft., with no shows reported. The company is reported to have acquired Louisiana Land & Exploration Co.'s recent location in the same area, and drilling will probably be started as soon as the present well is reported. This is the second deep test to be drilled in the area, and the area has been rechecked with geophysical instruments.

In the Erath field, Vermilion Parish, Phillips Petroleum Co. is preparing to dredge a canal to 1 Dugas, an east offset to the discovery well, a gas-distillate producer.

Second Test in West Bay

Gulf Refining Co. is moving in material for a second well in the newly opened West Bay field, Plaquemines Parish. The well is 2-E Buras Levee district in 35-22s-30e, about 660 ft. west of the discovery well, 1-B Timolat, completed the previous week as a 732-bbl. producer from sand at 7,270-86 ft. Locations for two marine operations were announced for the parish by the Texas Co. In the Delacroix Island area, location was staked in 32-20s-20e, while in the Octave Pass area location was made in 34-15s-14e.

In the Bayou De Glaize field, Iberville Parish, Humble Oil & Refining Co. is drilling ahead in 3-B Wilberts Lumber & Shingle Co. after cementing 7-in. casing at 8,911 ft. The well is credited with having cored sand and shale with an oil show below 8,500 ft., and the section will be tested unless a deeper sand is cored.

Location for a northeast outpost test was staked in the West Lake Verret field, St. Martin Parish, by Shell Oil Co., Inc. The well, 1 Salt Dome Oil Co., is in 10-14s-2e. The company has two active operations in this field and the new location is not expected to be drilled before one of the present wells is completed.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Ville Platte	2	861	20,234
Bayou Blue	2	326	7,142
Other fields	6	2,260	45,187
Gas wells: Fields	1	.....	9,676
Dry holes: Fields	6	.....	37,342
Wildcats	3	.....	27,462
Total	20	.....	147,042

LOUISIANA GULF COAST COMPLETIONS

Acadia Parish

Wildcat: Herton 1-A Leonard, dry, T.D. 10,050 ft.

Calcasieu Parish

Edgerly field: W. T. Burton 3 Lutcher-Moore Lumber Co., dry, T.D. 6,805 ft.
Iowa field: S. W. Richardson 1 Sweet Lake Land & Oil Co., dry, T.D. 8,967 ft.
Vinton field: Sutton Joint Account 2 Calcasieu National Bank, dry, T.D. 5,320 ft.

East Baton Rouge Parish

University field: Superior Oil Co. of Okla. 1 McGivney, dry, T.D. 7,000 ft.
Sugarfield Oil Co. 1 Deering, dry, T.D. 7,661 ft.

Evangeline Parish

Ville Platte field: Continental 1 Evangeline Securities Co., 332 bbl., ⅛-in. choke, perf. casing 9,845-85 ft., T.D. 10,125 ft.
Gulf 1 Joe Vidrene, 529 bbl., ¼-in. choke, perf. casing 10,078-10,108 ft., T.D. 10,109 ft.

Iberia Parish

Bayou Pigeon field: Plymouth 1 State, 178 bbl., 10/64-in. choke, perf. casing 8,052-63 ft., T.D. 8,140 ft.
Fausse Point field: Sun 5 Planters Lumber Co., dry, T.D. 1,598 ft.

Iberville Parish

Bayou Blue field: Navarro Oil Co. 1 Wilbert, 159 bbl., ⅝-in. choke, perf. casing 1,750-65 ft., T.D. 1,820 ft.
Superior 7 Schwing Lumber & Shingle Co., 175 bbl., 9/64-in. choke, perf. casing 5,000-10 ft., T.D. 5,322 ft.

Jefferson Davis Parish

Woodlawn field: Union Sulphur Co. 3 Norton, 240 bbl., ¼-in. choke, perf. casing 9,271-75 ft., T.D. 9,375 ft.

Plaquemines Parish

West Bay field: Gulf 1-B J. G. Timolat, 732 bbl., ¼-in. choke, top sand 7,270 ft., T.D. 7,286 ft.
Quarantine Bay field: Gulf 23 Q.Q. State, 453 bbl., ⅛-in. choke, T.D. 8,538 ft.

Rapides Parish

Cheneyville field: Amerada 16 Well, 260 bbl., ⅛-in. choke, perf. casing 5,685-5,708 ft., T.D. 5,721 ft.

St. Landry Parish

Port Barre field: Pan American 7 Garland, 389 bbl., 12/64-in. choke, perf. casing 5,885-95 ft., T.D. 6,127 ft.

St. Martin Parish

Section 28 field: Superior 1 E. C. Stuart, gas well, perf. casing 9,302-70 ft., T.D. 9,675 ft.

St. Mary Parish

Wildcat: E. G. Bateman 1 Foster, dry, T.D. 10,481 ft.

St. Tammany Parish

Wildcat: W. T. Burton 4 State-Lake Ponchartrain, dry, T.D. 6,931 ft.

LOUISIANA GULF COAST DRILLING REPORT

Assumption Parish

Shell 1 State, Grassy Lake prospect, 11-15s-13e, S.D. 8,335 ft.

Cameron Parish

Lisbon-Iberia Oil Corp. 1 Calcasieu National Bank, NW Grand Lake field, 19-12s-4w, drilling shale 9,265 ft.
Superior 17 State, Grand Lake field, 11-13s-4w, drilling shale 8,219 ft.

East Baton Rouge Parish

H. G. Cockburn 1 Gianelloni, SE University field, 58-8s-1e, drilling shale 8,770 ft.

Jefferson Parish

Titanic Oil Co. 1 Marrero Land & Investment Co., Westwego area, 2-13s-23e, drilling shale 8,565 ft.

Jefferson Davis Parish

Continental 1 Jaenke, South Roanoke field, 24-10s-4w, drilling shale 9,652 ft.

St. Charles Parish

W. P. Luse et al 1 Peyregne, dry, T.D. 11,354 ft.

St. James Parish

Shell 1 Schexnayder Community, LaPice field, 38-21s-15e, drilling shale 9,652 ft.

Vermilion Parish

Fohs 2 Mulvey Irrigation Co., Gueydan field, 34-11s-1w, drilling shale 9,513 ft.

Southwest Texas Fields

(Continued from preceding page)

Caldwell County

Tinney Creek field: Wiegand Brothers 1 Brown, 270 bbl., ⅛-in. choke, top chalk 2,330 ft., T.D. 2,460 ft.

Frio County

F. L. Thompson 1 Winters, dry, T.D. 5,242 ft.

Guadalupe County

Darst Creek field: Ellmag Oil Corp. 4 Appling, 50 bbl. oil and 50 bbl. sulfur water, pumping, T.D. 2,590 ft.
Elm Creek field: E. E. Hilize, casing collapsed, junked, T.D. 1,072 ft.

SOUTHWEST TEXAS DRILLING REPORT

Bee County

Pummill Oil Co. 1 Wittman, 3 mi. SE of Beeville, J. Ryan Sur., drilling shale 3,450 ft.

De Witt County

Atlantic 1 Zengerle, 4,000 ft. NE discovery well, Thomaston field, spudded.

Duval County

Smith & Story 1 Sutherland, Sur. 188, coring 2,290 ft.

Kenedy County

Skelly 1-388 State, SW of discovery well Baffin Bay field, drilling shale 4,538 ft.

Nueces County

H. H. Howell 1 Mattiza, W. B. Baker subdivision, dry, T.D. 6,507 ft.
H. H. Howell 1 Hellman, 4 mi. SW of Clarkwood, E. R. Oliver Sur., cored salt-water sand 6,595-6,025 ft., drilling ahead.

TEXAS GULF COAST

Rowan Field Extension Found; New Sand at Sheridan

By NEIL WILLIAMS

HOUSTON, Tex., Dec. 30.—While development along the Texas Gulf Coast district continued to be slowed down due to unfavorable weather conditions, several wildcats had reached critical stages, and important production tests were slated to be made on outpost wells in proven fields.

Humble 1 Egg, 7 miles northeast of LaWard in the Mauritz area, Jackson County, continued to attract attention as it cores ahead in hard sand below 7,400 ft. Geological tops released on the well during the week are as follows: Discorbis 4,756 ft., Heterostegina 5,123 ft., Marginulina 5,178 ft., and the Frio at 5,377 ft. Shaly sand with an oil odor was cored at 5,259-63 ft., 5,267-68 ft.; sand, oil odor, 5,276-80 ft.; shaly sand, oil odor, 5,286-92 ft., while sand with a salty taste was cored at 5,377-5,411 ft.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells: Lolita	1	118	5,919
West Ranch	1	447	5,567
Fishers Reef	1	144	9,005
Other fields	8	2,081	59,149
Dry holes: Fishers Reef	1	.....	9,952
Total	12	.....	89,592

Phillips 1 Houston Farms Development Co., 1 mile west of the discovery well of the Chocolate Bayou field, Brazoria County, which showed fo a gas-distillate producer the previous week, has been killed due to salt-water intrusion, and the casing will be perforated at 9,700-3 ft., preparatory to making a cement squeeze job. The well was originally tested at 9,690-93 ft.

Another extension was apparently assured the Rowan field, Brazoria County, as Humble 3 Hubbard, located on the north side of the field, cored the discovery pay, and is coring ahead in sand below 8,752 ft. A 15-minute drill-stem test at 8,553-60 ft. recovered 60 ft. of gas-cut mud, and the regular sand section was cored from 8,560-90 ft. On the southeast side of the field, Stanolind 1 Burgess flowed 217 bbl. per day through a ⅛-in. choke. Tubing pressure was 1,525 lb., and shut-in casing pressure 1,025 lb. There was no showing of salt water.

New Sand in Sheridan

In the Sheridan field, Colorado County, Shell Oil Co., Inc., uncovered a new productive sand as 3 Plow Realty Co., 1,500 ft. northeast of the discovery well, recovered 10 gal. of water-white distillate on a drill-stem test at 9,295-9,335 ft. Another test at 9,338-55 ft. recovered 3 bbl. of gas-cut mud. The hole is bottomed at a total depth of 9,375 ft., and the well is expected to be drilled deeper. This well cored the regular Wilcox pay, and is being drilled deeper as an exploratory test of the Wilcox section.

In the same county, and located about 2 miles southwest of the Garwood area, W. R. Davis 1 Brownston is bottomed at 10,012 ft. in hard sand, and 6-in. casing has been cemented for a production test. Details as to where the well will be tested were not available. This is the second deep test drilled in the county by this operator. The first test was drilled to a depth below 10,000 ft., and several interesting showings were encountered.

Unfavorable weather conditions continued to delay the testing of M. McMurrey et al 1 A. C. Allen, a prospective Wilcox pool opener located about 11 miles east of Hallettsville in Lavaca County. The well is bottomed at 8,524 ft., with 5½-in. casing cemented at 8,522 ft. Oil and gas showings were logged at intervals from 8,460-8,506 ft.

Locations for two wildcats were announced for Matagorda County. In the Bay City area, Stanolind Oil & Gas Co. staked location for 1 L. F. & Huebner in the E. Hall Survey, while Cities Service Oil Co. will move in material for 1 Duffy in the center of Block 13, J. E. Pierce subdivision in the J. W. E. Wallace Survey.

Red Fish Reef Test

In the Red Fish Reef field, offshore from Chambers County in Galveston Bay, and located about 1,300 ft. northeast of the discovery well, Gulf Oil Corp. was preparing to test 1-R-224 State. The hole is bottomed at 9,502 ft., and 7-in. casing was cemented at 9,500 ft. An electrical survey showed 4½ ohms on the third curve and 2 ohms on the fourth curve with 85 mv. porosity from 8,693-8,709 ft. Approximately 1 mile southwest of the discovery well, Humble 7-A-264 State is bottomed at 9,710 ft., and a series of cement squeeze jobs are being made, preparatory to testing oil and gas showings which were logged by an electrical survey at intervals from 8,700-9,100 ft. Humble 9-A-263 State, 1 mile southwest of the discovery well, is bottomed at 9,560 ft., and casing is expected to be cemented for a production test as side-wall cores recovered sand with an oil odor at intervals from 8,633-9,345 ft.

In the Greens Lake field, Galveston County, and located about 1,000 ft. southwest of production, Sun 11 J. D. Hughes is bottomed at 6,817 ft., and 5½-in. casing was cemented at 5,547 ft. Although details as to where the well will be tested were not available, a showing of oil is reported to have been encountered at approximately 5,500 ft., and if the test is successful it will open a new horizon for the field.

Tentative location for another deep test in the Double Gum area, Liberty County, has been made by Titanic Oil Co. The proposed location is situated about ¼ mile east of the company's 1 E. W. Boyt, a recent dry hole which is credited with having logged several interesting showings but due to mechanical trouble no successful completion was made. The proposed location is in Section 9, H.&T.C. Survey.

TEXAS GULF COAST COMPLETIONS

Brazoria County

Old Ocean field: Harrison & Abercrombie 1 Schweikart & Kalb, 275 bbl., ¼-in. choke, top sand 10,000 ft., T.D. 10,422 ft.

West Columbia field: Gulf 6 M. L. May, 388 bbl., ⅞-in. choke, T.D. 5,695 ft.

Chambers County

Anahuac field: Humble 57 Middleton, 548 bbl., ¼-in. choke, T.D. 7,229 ft.

Fishers Reef field: Humble 5-C-56 State, dry, T.D. 9,952 ft.

Humble 2-C-46 State, 144 bbl., ⅛-in. choke, perf. casing 8,962-64 ft., T.D. 9,005 ft.

Harris County

Fairbanks field: Stanolind 1 Jahnke, 150 bbl., ⅛-in. choke, top sand 6,800 ft., T.D. 6,840 ft.

Jackson County

Ganado field: Texas 3-A T. N. Mauritz, 63 bbl., 10/64-in. choke, top sand 5,095 ft., T.D. 5,108 ft.

Lolita field: Shell 3 Willoughby, 118 bbl., ⅛-in. choke, top sand 5,919 ft., T.D. 5,940 ft.

West Ranch field: Magnolia 118-A West, 447 bbl., ¼-in. choke, perf. casing 5,550-56 ft., T.D. 5,567 ft.

Jefferson County

Lovells Lake field: Humble 14 Jefferson Land Co., 139 bbl., ⅛-in. choke, top sand 7,792 ft., T.D. 7,794 ft.

Matagorda County

North Markham field: Ohio 3 Carlson, 223 bbl., ⅛-in. choke, perf. casing 7,702-23 ft., T.D. 7,984 ft.

Polk County

Segno field: Gulf 45 Wing, 295 bbl., ¼-in. choke, T.D. 8,056 ft.

TEXAS GULF COAST DRILLING REPORT

Brazoria County

Pan American 1 J. B. Kountz, southeast flank test, Damon Mound dome, drilling shale 3,970 ft.

Phillips 1 Triangle Development Co., Chocolate Bayou field, T.D. 11,519 ft., drill stem stuck.

Strake Petroleum Co., Inc., 1 Griffith, SW Alta Loma field, H. P. Cayce Sur., drilling shale 6,040 ft.

Chambers County

Humble 8-A-223 State, Red Fish Reef field, drilling shale 9,109 ft.

Humble 9-A-263 State, Red Fish Reef field, drilling shale 9,560 ft.

Humble 10-A-249 State, Red Fish Reef field, drilling shale 1,003 ft.

Standard Oil Co. of Texas 1-47 State, Fisher's Reef field, drilling shale 8,912 ft.

Matagorda County

Texas 1 E. M. Tyson, 4,700 ft. NE discovery well Blessing field, J. E. Pierce Sur. 2, drilling shale 7,860 ft.

Montgomery County

Superior Oil Co. of Calif. 1 T. A. WcWhorter, T. J. Nichols Sur., S.D. 8,567 ft., drill stem stuck.

California Fields

(Continued from Page 57)

in. liner 7,315 ft., 7,128 ft. 2½ and 3-in. tubing, deepened from 6,949 ft. Ventura County.

Santa Maria Valley Field

Union 2 McCoy-Cooney 27-10n-34w
Pumped 147 bbl., 13.5-gravity, 4 per cent cut, elev. 234 ft., T.D. 5,440 ft., 7-in. 5,240 ft., 223 ft. 5½-in. liner 5,438 ft., 180-mesh perf. 5,237-5,438 ft., 5,370 ft. 3-in. tubing, 25 days' drilling time. Santa Barbara County.

Ventura Avenue Field

Associated 115 Lloyd 24-3n-23w
Flowed 620 bbl., 30.1-gravity, 5 per cent cut, 131,000 cu. ft. gas, 1-in. bean, elev. 835 ft., T.D. 9,930 ft., 7⅝-in. 9,170 ft., 804 ft. 5⅛-in. drill-pipe liner 9,927 ft., perf. 9,179-9,927 ft., 9,086 ft. 2½-in. tubing. Completed on compressor in deep 57 zone. Ventura County.

Lloyd Corp. 5 Lloyd 24-3n-23w
Flowed 1,200 bbl., 32.4-gravity, 2 per cent cut, 2,000,000 cu. ft. gas, 24/64-in. bean, pressures 500/1,400 lb., elev. 710 ft., T.D. 10,475 ft., P.B. 8,840 ft., 9⅝-in. 6,890 ft., 1,375 ft. 5-in. liner 10,440 ft., 8,470 ft. 2½-in. tubing. 7-in. casing landed 9,844 ft., gun perf. 8,500-20 ft. and 8,630-50 ft. resulted in production. 5-in. liner perf. at intervals 9,930-10,130 ft. and 10,190-10,440 ft. but tested wet and hole was P.B. to 8,840 ft.; 262 days' drilling time. Ventura County.

COASTAL DISTRICT WILDCATS

Huasna District

Harvey Oil Corp. 1 Huasna 11-32s-14e
T.D. 4,520 ft., 997 ft. 5½-in. liner perf. at intervals 3,416-62 ft., 4,450 ft. 2½-in. tubing; swabbing. Formation tests: 3,924-4,129 ft. showed small amount of oil; 3,360-3,420 ft. recovered 1 bbl. mud, no oil. San Luis Obispo County.

South Mountain District

Cal. Sec. 1 S. M. 17-3n-20w
T.D. 4,501 ft., P.B. 2,600 ft. Recemented through perf. 2,260-2,410 ft. Now cleaning out after pumping salt water with trace oil. Ventura County.

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ILLINOIS FIELD REPORT

After Two Banner Years Drop In Activity Is Predicted

By STAFF CORRESPONDENT

MATTOON, Ill., Dec. 30.—Dr. Leighton, chief of the Illinois State Geological Survey, estimated total production for the state at more than 146,600,000 bbl., valued at $160,000,000. Approximately 3,900 new wells were completed during the year, of which 81 per cent, or 3,160, were producers. For the previous year, 3,675 wells were completed, of which 2,970 were producers.

The survey report disclosed wildcat wells did not fare so well. Only 36 of 454 drilled during the first 11 months were successful, opening 25 new pools and extending 11 old producing areas. The 1940 record of wildcatting, Dr. Leighton said, was only 2 per cent better than that of 1939.

Prospects are slight for increased activity in Illinois oil fields in 1941, Dr. Leighton declared. A large part of acreage proved for production has been completely drilled to known producing sands, and expansion prospects for 1941 are mainly dependent upon important deep tests now under way in the Salem and Louden pools.

Pipe-line extensions were constructed in 1940 on a large-scale basis. One new refinery was constructed with a daily capacity of 7,500 bbl., and the capacity of several others increased. Total daily refining capacity exceeded a quarter million barrels on August 1, as compared wtih less than 200,000 bbl. capacity the first of the year. Eighty per cent of Illinois production was shipped to refineries in the Indiana-Illinois district, 15 per cent to the Appalachian district and 5 per cent to the Atlantic seaboard.

Drilling operations for 1940 cost approximately $29,000,000, an increase of $6,500,000 over the previous year, due principally to added cost of deeper well drilling.

Hoodville Pool

The Texas Oil Co. during the past week completed one of the largest producers ever completed in the rapidly expanding Hoodville pool of Hamilton County. This well, 2 Charles Hood, SW SW NE 3-6s-6e, produced 475 bbl. in 18 hours following a shot in the Benoist sand.

New Wayne County Production

Production was established from a previously nonproductive formation in the Clay City pool during the past week with the completion of Pure 1-B Hossleton in 21-2n-8e, Wayne County. This well was completed as a pumper in the Cypress sand. Formerly, the only production in this area had been from the McClosky lime.

Because of the holiday season, detailed drilling and completion reports for the State of Illinois are unavailable. Publication of these reports will be resumed in the issue of January 9, 1941.

Permian Basin, Panhandle

(Continued from Page 65)

early in the year. The new well topped the sand at 990 ft. and is bottomed at 1,130 ft. The well was opened only once for a short flow and was estimated good for several hundred barrels of oil hourly. The location is 467 ft. out of the NW cor. Section 30, Block G.G., H.E.& W.T. Survey.

George E. Atkins and J. Silas Pittman have obtained a half interest through a farmout of an 80-acre tract from J. M. Hefner, Dallas, and plan to start the first of four tests in the near future. First will be 1 Bouscaren, NW NW SW Section 25, Block G.G., H.E.&W.T. Survey. It will be 1,250 ft. east of a producer in the field.

About 1½ miles southeast of the field Moore Exploration Co. and Olson Drilling Co. 2 Noelke, succeeded in killing a gas blowout at 1,195 ft. and were preparing to run 5½-in. casing. The well is located 494 ft. from the north and 1,690 ft. from the west lines of Section 77, Block G., Theo. W. Carter Survey.

There are now eight producers in this new field and as yet no pipe-line outlet has been obtained. Some of the oil produced during the past few months has been trucked to the Western refinery at Fort Stockton, however, production and drilling have both been greatly curtailed due to the needed outlet.

NORTHERN WEST TEXAS COMPLETIONS

Andrews County

Phillips 1-125 Embar, dry at 2,500 ft.

Cochrane County

Texas 1-H Mallet Land & Cattle, pumping 184 bbl. oil plus 49 per cent water, acidized, T.D. 5,098 ft.

Gaines County

Cities Service 1 Henry James, dry, acidized, T.D. 5,314 ft.

Hockley County

Bass & Dillard 3 Forehand, 1,038 bbl., acidized, T.D. 4,006 ft.
Devonian 1 Citizens Nat. Bk., 1,206 bbl., 11,000 gal. acid, T.D. 5,019 ft.

Terry County

Sloan & Zook 1 Bailey, dry at 5,800 ft.
Denver 1 Lewis, dry at 5,537 ft.

Yoakum County

Shell 14-A Baumgart, pumping 1,198 bbl., acidized at 5,185 ft.
Skelly 2 Comer, 585 bbl., 10,000 gal. acid, T.D. 5,215 ft.
Don Danvers 11 Oil Development Co., 944 bbl., 10,000 gal. acid, T.D. 5,266 ft.
Denver Prod. & Refg. 22 Whittenburg, 1,292 bbl., 10,000 gal. acid, T.D. 5,148 ft.

TEXAS PANHANDLE

AMARILLO, Tex., Dec. 30.—There were seven new oil wells and one dry hole in the Texas Panhandle area during the week past. New locations dropped considerably with only seven being reported. The new locations were, two in the Stinnet field, and four in the Borger field, Hutchinson County, and one in the Shamrock field of Wheeler County.

PANHANDLE COMPLETIONS

Carson County

Skellytown field: Clayton-Dwyer 2 Schafer, pumping 78 bbl., 3,038-68 ft.
Clayton-Dwyer 3 Schafer, pumping 39 bbl., 3,055-90 ft.
Magnolia 94 fee 244, pumping 473 bbl., 3,045-80 ft.
Cities Service 2 Magnolia, pumping 129 bbl., 3,076-3,158 ft.

Gray County

Magnolia 39 fee, pumping 114 bbl., 2,980-3,076 ft.
Moran Drilling 5 Skidmore, pumping 188 bbl., 3,140-3,290 ft.
Tripplehorn 6 Webb, pumping 19 bbl., 2,700-45 ft.
Wilcox 45 Combs-Worley, pumping 216 bbl., 2,961-3,121 ft.

Hutchinson County

Borger field: J. E. Crosbie 3 Cockrell, pumping 200 bbl., 2,829-2,929 ft.
Stanolind 21 Haile B, pumping 68 bbl., 2,949-3,019 ft.
Dolomite Prod. 1 Stephenson, pumping 88 bbl., 3,148-3,210 ft.
Phillips 28 Perkins, pumping 179 bbl., 2,830-80 ft.
Shell 5 Harvey B, pumping 406 bbl., 3,005-68 ft.

Motley County

Wildcat: Humble 1-C Matador, dry, T.D. 7,430 ft.

Wheeler County

Magic City field: Hugale Oil 9 Binkley, dry at 2,462 ft.
Shamrock field: Flambeau Oil 1 Patterson, pumping 316 bbl., 2,060-2,111 ft.

SOUTHEAST NEW MEXICO

HOBBS, N. M., Dec. 30.—Much of the activity of the Southeast New Mexico district was at a standstill during the past week, however, there were three new oil completions listed and one recompletion. New locations for the district totaled nine, one being in Eddy County and eight in Lea County.

SOUTHEAST NEW MEXICO COMPLETIONS

Eddy County

Leonard field: C. B. Buck 1-B Dodd, Sec. 11-17-29, 54 bbl., natural, open tubing, 2,495-2,591 ft.

Lea County

West Eunice field: Wilson 1 Shell-State, deepened to new total depth 3,780 ft., new initial 106 bbl., pumping.
Arrowhead field: Gulf 2-D Leonard, 40 bbl., ⅛-in. choke, 3,820-45 ft.
South Eunice field: Cities Service 8-AA Closson, 365 bbl. in 13 hr., 1-in. choke, natural, 3,750-3,805 ft.

SOUTHEAST NEW MEXICO DRILLING REPORT

Chaves County

L. E. Elliott 1 State ..... NW NE 16-11-31
Spudded and S.D.
Roxana Oil 1 Maull ..... NE NW 11-12-25
Drilling 450 ft.
Roxana Oil 1 Franks ..... SE NW NW 17-9-25
7-in. at 425 ft., S.D. casing 894 ft.
Helmes-Martin 1 Stephens ..... C NW NE 22-15-29
Old well drilling deeper, 7-in. at 1,848 ft., show oil 3,112-30 ft., drilling 3,140 ft.
H. Steinberger 1 Headley ..... NW SW 26-14s-29e
Est. 500,000 cu. ft. gas 1,826-28 ft., show oil 2,885-95 ft., show oil 3,080-3,140 ft., drilling 3,141 ft.

Eddy County

A. & M. Pet. 2 State ..... NW SE 15-21-27
Drilling 480 ft.
Mac T. Anderson 1 Brainard ..... NE NE 28-18-27
Drilling 1,575 ft.
Bedingfield & Walker 1 Seale ..... SE SE SE 10-20-27
Drilling 1,429 ft.
Jack Harris Josey ..... SW SE 19-20-23
T.D. 643 ft.
Jones & Yates 1 Everest ..... NE SE 15-18-26
Show oil 1,215-18 ft., 1,448-52 ft., show gas 1,549-50 ft., show oil 1,782-94 ft., T.D. 1,971 ft.
S. P. Yates 1 Taylor-Ross ..... NW SW 22-19-25
Drilling 600 ft.
Fulton 1 Johnson ..... NW SE 22-19-27
S.D. 1,835 ft.
Truett & Tallmadge 1 Rudahl ..... NE SE 2-20-24
12½-in. 302 ft., drilling 1,474 ft.
Dooley & Haynes 1 Martin ..... SE NW 9-18-25
5½-in. at 975 ft., S.D. 1,000 ft.
Trojan 1 Grant ..... SW NE 33-20-25
Set 8¾-in. at 1,300 ft., drilling 2,020 ft.
Clark & LaNeve 1 Boulter ..... SE NW 28-19-27
Show oil 1,126 ft., S.D. 1,250 ft.
Fred Turner 1 DeVito 12-23-35
Show gas 1,100-05 ft., 7-in. 1,500 ft., S.D. 1,670 ft.

Otero County

Otero Oil 1 State ..... SE NW 5-22-10
Reaming 8¼-in. at 1,190 ft., T.D. 1,240 ft.
R. H. Ernest 1 Located Land Co. ..... SE SE 20-25-7
T.D. 3,843 ft.

Appalachian Fields

(Continued from Page 63)

000 cu. ft. gas, Speechley and Tiona sands, T.D. 3,461 ft.

DRILLING REPORT

Armstrong County

Boggs Township: Humphrey, Stone & McCall 1 Lidge Best, 1,200 ft.
J. K. Sharp et al 1 James Sefton, 2,300 ft.
Cowanshannock Township: Equitable 1 J. C. Wilson, rigging up.
Peoples 3 Harry Boyer, 2,888 ft.
Kittanning Township: Local Co. 1 B. H. Shreckengast, 2,275 ft.
Equitable 1 Edward Boarts, 3,224 ft.
Plum Creek Township: Peoples 3 Mrs. John Boyer, 2,589 ft.
Equitable 1 Harry Kough, 1,500 ft.
Wayne Township: Galbreath et al 1 William Alcorn, 1,400 ft.
Louden Drilling Co. 1 Armstrong Co. Trust Co., 2,275 ft.

Clarion County

Porter Township: Squirrel Hill Gas Co. 2 Charles Fagley, 1,680 ft.
Gourley Gas Co. 3 Andrew Gourley, 2,130 ft.

Fayette County

Franklin Township: George L. Yaste 1 Allen, 520 ft.
Nicholson Township: Greensboro 1 George Lecrone, 2,270 ft.
Duquesne 1 Louise Collins, rigged up.
Wahler-Powers 1 Geneva Supply Co., 1,070 ft.

Greene County

Aleppo Township: Gus B. Patterson 1 Samuel Fuller, 2,500 ft.
Center Township: Devine et al 1 Hugh Smith, 1,965 ft., fishing.
Monongahela Township: Mayne et al 1 Andrew Kovak, rig standing.
H. B. Scott et al 1 Silas Provins, 550 ft., casing.
Morris Township: Romney Rutan et al 1 Clutter, 790 ft.
Romney Rutan et al 1 Alfred Rutan, shot exploded prematurely and rig will be skidded 60 ft. and redrilled. Completed as a gas and oil well.
Richhill Township: Manufacturers Light & Heat Co. 1 William Hughes, 447 ft.
Perry Township: Gartland Oil Co. 1 Mary McClure, 2,645 ft.
Wayne Township: Freeland et al 1 J. H. Simpson, 3,285 ft.
Whiteley Township: Lewis Petit et al 1 Shields, 2,810 ft.

Indiana County

Armstrong Township: T. W. Phillips 1, W. E. Sell, 2,790 ft.
North Mahoning Township: John Wray et al 1 Floyd Stear, 975 ft.
Washington Township: Peoples 1 R. Bates, 1,015 ft.

Washington County

Amwell Township: Carnegie 1 D. C. Blake, 1,821 ft., reaming.
Fallowfield Township: Equitable 1 D. Irwin, testing gas in Gantz sand, T.D. 2,265 ft., initial volume 660,000 cu. ft., blew down to 174,000 cu. ft.
North Strabane Township: Carnegie 1 Cleli Gilkerson, rigged up.
Morris Township: Carnegie 1 Nelan heirs, building rig.
Somerset Township: Carnegie 2 J. D. Amos, 2,368 ft.
West Bethlehem Township: J. D. Amos 1 Frank Myers, 1,910 ft.

Westmoreland County

Derry Township: Latrobe Steel Co. 1 Keystone Coal Co., 3,500 ft.
Washington Township: Peoples 1 John Weister, 873 ft.

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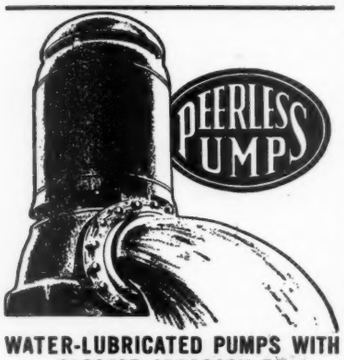

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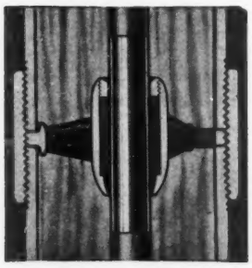

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PEERLESS
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Among the Drilling

HOUSH & THOMPSON, Houston, Tex., have apparently opened a deep sand on the south flank of the Edgerly field, Calcasieu Parish, Louisiana, as Gulf Refining Co. 1 Miller is bottomed at 7,555 ft., and the well is showing gas, mud, and oil. In the Chocolate Bayou area, Phillips 1 Houston Farm Development Co., 1 mile west of production, is being recompleted. In the Greens Lake, casing was cemented on Sun 11 J. D. Hughes, preparatory to testing a new sand section at approximately 5,500 ft. In the meantime, drilling continues at the Sorrento dome, Ascension Parish, Louisiana, for William & King.

H. H. WEGENER was preparing to complete the Adkins 1 Orient Coal Co., near the town of Benton in Franklin County, Illinois, in the Tar Springs sand at 2,111-23 ft. Casing has already been set. If the well is completed as a good producer, it will set off a drilling boom in the town of Benton. Wegener has already secured 32 drilling permits from the town of Benton for work in that area. The first of the townsite wells is scheduled to be drilled in about 15 days.

EDWIN M. JONES, San Antonio, Tex., will move a rotary to Live Oak County, Texas, for another Wilcox test. The well is 3-B George West, 2 miles south of 1-G George West, a recent dry hole which logged favorable showings of oil and gas in the Wilcox sand.

L. A. DOUGLAS, San Antonio, Tex., staked location for a 7,000-ft. wildcat, 5 miles southeast of Odem in San Patricio County, Texas. The well is located on the M. C. & E. D. Henry lease, Block 36, Drummond subdivision.

PARKER Drilling Co., Tulsa, was waiting on derrick to install a new rotary rig on the Gulf Oil Corp. 1 Bateson, 2-14n-4e, Bay County, Michigan. The well blew out around the master gate early in December and burned the drilling equipment and derrick; it is now making better than 4,000,000 cu. ft. of gas through ¼-in. choke with 1,900 lb. back pressure. First task before drilling can be resumed will be the killing of the well and the recovery of almost 7,800 ft. of drill pipe which was left in the hole when the kelly joint was backed off preparatory to closing the master gate just prior to the blowout. The well, already the deepest in Michigan, is now bottomed in either the Salina or the top of the Niagaran at 7,776 ft. Possibilities are that the well will be carried to 9,000 ft. or deeper for the testing of the Niagaran, Trent and St. Peter formations.

CARTER Drilling Co., Corpus Christi, Tex., is preparing to spud Union Producing Co. 1-A Rivers, a projected 5,000-ft. test located in the Agua Dulce field, Nueces County, Texas.

PAUL ENSSLIN of London, Ky., has been awarded contract and has started operations at Globe Oil & Gas Co.'s deep test well on the Sinking Creek dome in Laurel County, Kentucky. The wildcat will test the St. Peter expected at approximately 4,000 ft.

HARRY L. EDWARDS Drilling Co., Houston, Tex., is preparing to retest Gulfboard 1-239 State, located on the Mud Island prospect, offshore from Aransas County, Texas., in Aransas Bay. The well showed for a producer the previous week when tested at 9,210-16 ft. Four other operations are reported at the Esperson, Abbeville, West Ranch and Dickinson fields for W. P. Luse, Continental Oil Co., Pan American Production Co., and the Midstates Oil Co.

GEORGE ECHOLS, Houston, Tex., will move a rotary to the Double Gum prospect, Liberty County, Texas, where an 8,700-ft. test will be drilled in the H.&T.C. Survey, Section 9. Three other rotaries are running at the South China field, Jefferson Parish, Louisiana, and at the Westwego and St. Gabriel prospect in Jefferson and Iberville parishes, Louisiana.

W. B. OMOHUNDRO, drilling contractor and operator of Wichita Falls, Tex., at last reports was drilling below 5,200 ft. at his wildcat 1 mile north of Scotland in Archer County, Texas. The test, 1 William Coleman, is located in the northeast corner of Block 51, L. Pennington Survey. At his 1 Perry Browning, also in northern Archer County, he was waiting for a spudder to drill plug at 5,127 ft. after coring saturated section to 5,147 ft. The 1 Perry Browning is located in the southeast corner of Block 17, German Emigration Co. Lands, northwest of production on the Vogtsberger farm.

ALLEN & MORRIS, San Antonio, Tex., are waiting on favorable weather before moving a rotary to a new location in the Duck Bay area of Calhoun County, Texas, for Coronado Corp. Pan American 1-B Willamar Community, an offset to the discovery well of the Willamar field, Willacy County, Texas, has been temporarily shut down due to a 9-in. rain, while in the West Ranch field, Jackson County, one rotary is running for Blutch Oil Co.

DICK DUNCAN has set casing on the 1 Zellar, SE NE NE 34-3s-5e, Hamilton County, Illinois, to test McClosky saturation at 3,337-59 ft. Drill-stem test showed 650 ft. of oil and drilling mud in 30 minutes. A new pool will be opened when the well is successfully completed.

FALCON-SEABOARD Drilling Co., Tulsa, is drilling ahead below 9,700 ft. on the Hope Natural Gas Co. 8517 Gribble in the Lost Creek area of Harrison County, West Virginia. Same company reports setting 7-in. casing at 9,503 ft. on the Gulf Refining Co. 1 Galveston Bay-State; the hole is being drilled to a completion depth of 10,300-10,400 ft. with 3½-in. drill pipe. On the Gulf 1 Hirsch, in the Ville Platte field of Louisiana, the latest report showed a depth of 4,300 ft. in a 9-in. hole.

MORRIS HAMILTON Drilling Co., Houston, Tex., is preparing to test W. R. Davis 1 Brownston, a Wilcox test located southwest of the Garwood area in Colorado County, Texas. The hole is bottomed at 10,012 ft., and 6-in. casing was cemented for the production test.

AMERICAN Drilling Co. was looking for a casing or hole-reducing point below 3,600 ft. on its 1 Cromwell, S½ SW SW 8-18n-3w, Clare County, Michigan.

ARROW Drilling Co., Tulsa, has set pipe to the Biehl sand on its 1 Joseph Crooks, NW SE SW 28-3s-14w, Calvin field, White County, Illinois. The test was drilled to 2,989 ft., where the McClosky was dry but an electrical survey showed 22 ft. of saturation in the Biehl at 1,895 ft. In the Albion pool. Arrow's 1 L. Stafford, SW NE NE 13-2s-10e, was drilled to 3,265 ft. through dry McClosky. No shows were obtained and casing was not run in the hole.

CLAPSADDLE & HARRIS, Coloma, Mich., ran 5-in. casing to 1,258 ft. on their 1 Bair, NW SE NW 9-1s-14w, the Bloomingdale area of Van Buren County, Michigan. Same operators report a dry hole on the 2 Remington, NW SE SW 10-1s-14w, after several acid treatments failed to develop any production from the Traverse lime at 1,279 ft., total depth.

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Clapsaddle & Harris have recently secured permit for drilling 1 Wall, NW NE SE 31-1n-14w, Chesshire Township, Allegan County, Michigan; company tools will be used for drilling the test.

TIDEMAN & FRANKLIN, Houston, Tex., are preparing to test a prospective pool opener in Calhoun County, Texas. The well is located about 9 miles south of Port Lavaca, and was drilled for McSpadden Co. et al on the E. Clark lease. Total depth is 6,240 ft., and casing was cemented for completion after an electrical survey showed favorable indications.

JULIUS STOLNS & SONS, Louisville, Colo., has contract and has moved in material for the drilling of Western Petroleum Co. 1 Mosier, SW SW 31-35n-64w, Niobrara County, Wyoming. The test is located about 5 miles southeast of the Lance Creek field, the well site being selected by a soil-analysis survey. The Sundance sand is expected at around 700 ft. and the Leo sand at about 2,000 ft. A combination cable-tool and rotary rig will be used for drilling the test.

CAMPBELL Drilling Co., Tulsa, is drilling for the Mid-States Oil Co. in the Prague pool of Lincoln County, Oklahoma. The test is one of three rigs operating in the area.

TWIN Drilling Co., Tulsa, is deepening its 1 Tomcalla, SE SE SE 24-2s-15w, to the Traverse lime. The hole was originally drilled as a geological core test and is now being converted to a production test. A rotary rig is being used for the work. The same company got a dry hole on its 2 Barringer, NW SE SE 29-1s-16w, Van Buren County, Michigan, when Traverse lime topped at 1,012 ft. and drilled to 1,019 ft. failed to produce. The failure is a west offset to the 1 Barringer which was a light producer.

BERRY BROTHERS, Tulsa, are drilling in Osage County, Oklahoma, to test a single-well structure which has produced 114,000 bbl. since 1933. They hope to discover, in addition to more oil, some information on how a small pool tapped for a period of years by a single well will act. The new hole is Berry Brothers 7 Haney, 1,595 ft. north of the south line and 307 ft. east of the west line in 28-23-9.

TOM PALMER, Wichita, Kans., has made deal with M. S. and Edwin W. Murray of Kansas City, Kans., for 2,000 acres of leases out of the latter's block and is to drill a deep test in NE 31-5n-8w, west of the Chickasha field in Grady County, Oklahoma. Palmer will be equipped to go 7,500 ft., if necessary.

KIOWA Drilling Co., Wichita, Kans., apparently has opened a pool in western Stafford County, Kansas, where they drilled a well in which they had an interest with Perry A. Thayer, Derby Oil Co. et al. Oil saturation has been recovered from 3,750-53½ ft., and casing has been set for a test. The strike is 5 miles from production.

Crew of Rowe Bros., Inc., Wichita Falls, Tex., at a well drilled in the Hull-Silk field of Archer County, North Texas: At the cathead is E. B. Cunningham; at his driller's post, Moss Rowe; in front of the draw works, R. B. Andress, pipe racker; and spinning the pipe is P. C. Bumpers

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North Texas Fields

(Continued from Page 60)

Sur., 10-in. at 105 ft., saturation from 3,887-3,903 ft. and 3,939-41 ft., cemented 5½-in. at 3,897 ft., drilled plug and bailed down with show of oil, 300-qt. shot, no results, S.D. 4,083 ft.
Akin, Dimock & Costley 1 Dodson, 1,470 ft. from W and 150 ft. from S lines, Dodson farm in W. H. Anderson Sur., Abst. 1, 1,350-ft. test, location.
Harper & Knappenberger 1 Raming, 150 ft. from N and E lines, W½ of S 103 acres of N 203 acres of Raming 300 acres in Henry Hastie Sur., Abst. 92, 1,400-ft. test, preparing to drill.
King Oil 1 Ancell, 330 ft. from N and E lines of L. C. Gibbs Sur., Abst. 390, 4,000-ft. test, location.

Wilbarger County

A. E. Blair 1-A B. J. Scott, 3,210 ft. from N and 1,170 ft. from W lines, Sec. 26, Blk. 13, H.&T.C. Sur., 8¼-in. at 460 ft., T.D. 557 ft., S.D.
Consolidated Oil 1 Clifford Pollan, 187 ft. from W and 407 ft. from N lines of Sec. 9, Blk. 16, H.&T.C. Sur., drilling 3,180 ft.
W. H. Gant 1 Mock, Sec. 23, Blk. 11, H.&T.C. Sur., 6,000-ft. test, rigging up rotary.
Big Six Oil 1 Morris, Sec. 3, Blk. 14, H.&T.C. Sur., show oil 2,895-2,907 ft., 7-in. 2,895 ft., T.D. 2,905 ft., prepare drill plug.
Ray Brothers 1 Henry Streit, 72-acre tract in S. N. Gosnel Sur., Abst. 1,231, 1,800-ft. test, drilling 710 ft.
W. B. Omohundro 1 W. T. Waggoner, 1,100 ft. from E and 150 ft. from S lines of Sec. 49, Blk. 4, H.&T.C. Sur., rigging up spudder at 1,247 ft.

Wise County

Cranfill & Rogers 1 McKay, Sec. 8, Falls C.S.L. Sur., coring pay 5,797-5,858 ft., milling on iron 5,864 ft.
Manahan Oil 1 E. R. Collier, J. M. Wade Sur., Abst. 868, drilling 5,165 ft.

Young County

L. T. Burns 1 Leberman, 2,317 ft. from E and 432 ft. from W lines, Sec. 210, T.E.&L. Sur., drilled Gunsight lime 825-27 ft., S.D. 887-91 ft., prepare test.
George Keith 1 Fay Clark, 783 ft. from E and 150 ft. from N lines, Sec. 212, T.E.&L. Sur., drilling 776 ft.
Kervin Oil 1 Griffin, 851 ft. from S and E lines, Sec. 1951, T.E.&L. Sur., saturation from 2,920-53 ft., S.I.
E. Lennington 1 Perry, 165 ft. N of C of river and 46 ft. from W line of 126-acre A. W. Perry farm in Oliver T. Brown Sur., Abst. 25, spud and S.D.
Ben H. Rankin 1 Mary Logan, SW part Blk. 2, J. W. Doty Sur., 8 mi. NE Graham, 2 mi. W Nelson field, small showing oil 3,575-3,600 ft., 5½-in. 3,565 ft., drilling plug and bailed dry, S.D. 3,613 ft.
Kimmell, Lee & Co. 1 Campbell B, 150 ft. from S and E lines of W 40 acres of N 40 acres of S½ Sec. 1371, T.E.&L. Sur., 1,100-ft. test, drilling 788 ft.
B. C. Gilmore 1 Bagley, 210 ft. from E and 650 ft. from S lines of Leroy W. Ross Sur., Abst. 1352, 700-ft. test, location.
L. T. Burns 1 Bloodworth, 150 ft. from N and 783 ft. from W lines of Sec. 214, T.E.&L. Sur., 1,000-ft. test, location.
S. D. Glover 1 C. E. Luton, 150 ft. from S and E lines of J. L. Elmore Sur., Abst. 1421, location.

WEST CENTRAL TEXAS

FORT WORTH, Tex., Dec. 30.—Little field activity was reported for the West Central Texas area during the past holiday week. Eastland County's McElreath pool, opened early in the year, was given its second producer and promise of considerable drilling in the coming months.

The original discovery well was Jones & Stasney and Groover & Rose 1 C. W. McElreath, Section 103, Block 3, H.&T.C. Survey. It was completed from the 3,035-ft. level. For the second well in the field Danciger Oil & Refineries, Inc., has brought in 1 Mary Abbot, a ¼-mile southeast extension. This well topped the Caddo lime 1 ft. higher than the discovery and took 2 ft. of penetration and shut down to cement casing. The lime was topped at 2,960 ft. and saturation was encountered at 2,965 ft.

New activity is being carried on in the extreme southeast corner of the Sayles field of Jones County. F. Kirk Johnson, Fort Worth, has completed the first three tests planned for the area, 2 H. Sayles, Jr., Section 6, Block 20, T.&P. Survey, was completed early the past week for 135 bbl. daily from saturation drilled from 1,912-39 ft. The other two tests are being drilled and are scheduled for completion within a few days.

WEST CENTRAL TEXAS COMPLETIONS

Brown County

Wildcat: Hogan & Stewart 1 Ford, 150 ft. from S and 1,130 ft. from E lines Sec. 11, Blk. 11, H.&T.B. Sur., dry at 895 ft.

Coleman County

Novice field: States Oil 4 Coker, 116 bbl. with 750,000 cu. ft. gas, 30-qt. shot, 3,560-90 ft.

Haskell County

Nowles field: J. C. Hunter 1 Strand, dry at 3,420 ft.

Palo Pinto County

Pickwick field: R. H. Gobles 1 L. C. Moore, pumping 15 bbl. at 1,399-1,407 ft.

Taylor County

View field: Geo. Callihan 1 Butterfield School, 6,000 gal. acid from 2,398-2,414 ft., dry 2,495 ft.
W. J. Walsh 1 Fain, flowing 366 bbl. in 22 hr., 1,000 gal. acid 2,379-98 ft.

WEST CENTRAL TEXAS DRILLING REPORT

Brown County

A. J. Stokes 1 B. S. Bayston, 210 ft. from SE line and 2,962 ft. from SW line of Prosper Mangel Sur. 604. Drilling 1,370 ft.

Callahan County

A. P. Heinze 1 J. Kincaid, 467 ft. from N and W lines of E½ SW Sec. 41, B.B.B.&C. Sur., 3,800-ft. test. Location.
Rhodes Drilling Co. 1 N. M. George, NW Sec. 75, O.A.L. Sur., 4 mi. E Baird, 2,700-ft. test. S.D. 2,641 ft.
W. D. Austin 1 I. N. Jackson, 150 ft. from N and W lines of Sec. 2, C.&M. Sur. S.D. casing 815 ft.
C. D. Hagarty 1 Windham, 990 ft. from N and 330 ft. from W lines SE Sec. 154, G.H.&H. Sur., show oil 980-85 ft., S.D., but may deepen.
Reeves & Sorrell 1 Young, 1,980 ft. from N and 660 ft. from E lines Sec. 37, B.B.B.&C. Sur., H.F.W. 1,975-2,000 ft., running 6⅝-in. at 2,000 ft.

Coleman County

L. J. Derrick 1 J. W. Vance, 330 ft. NW of old Texas 1 Vance, also in Sec. 101, E.R. Sur., 2,100-ft. test, location.
R. H. Murray 1 Morris, 467 ft. S and W of NE 160 acres of J. Greenwood Sur. 304. Drilling 1,300 ft.
M. R. Stuard 1 Minear, 330 ft. from N and 1,850 ft. from E lines of 360-acre tract in E. Votaw Sur. 244. Location.

Comanche County

Campbell 1 Stark, SW part of Asa Hoxey Sur. S.D. repair 145 ft., will set 6⅝-in.
Natural Resources 1 Armor, Sec. 105, T.&N.O. Sur., 5 mi. NE of Eden, prepare to resume drilling at 1,565 ft., contract depth 3,250 ft., to Ellenburger lime, cleaned out to old T.D., prepare resume drilling, no report.

Concho County

Floyd C. Dodson 1 Robert Wilson, Thomas Green Sur., 10 mi. SW Eden, show oil and gas 3,792-95 ft., 3,819-20 ft., at 3,828-29 ft., T.D., showed 1 baller water per hr., may drill deeper, 15½-in. 469 ft., 12½-in. 1,490 ft., 10-in. 2,185 ft., 8¼-in. 3,462 ft., 6⅝-in. 3,748 ft.

Eastland County

C. D. Lane 1 Mason, 900 ft. from N and 750 ft. from W lines of W½ NE Sec. 13, D.&D.A. Sur. Drilling 400 ft.
W. M. Morris 1 Carrie Bryant, 1,520 ft. from N and 200 ft. from W lines of SE Sec. 20, Blk. 1, H.&T.C. Sur., 6⅝-in. 825 ft.
Hickok Oil 1 Luse & Gray, NE Sec. 486, S.P. Sur., Ordovician test, ¼ mi. SE of new McElreath field, 4,250-ft. test, drilling 235 ft.

Erath County

W. A. Young 1 J. B. Mills, J. Harvey Sur., 5 mi. NW of Dublin. T.D. 212 ft., cleaning out hole.

Fisher County

F. A. Stephenson 1 Maberry, SE SW Sec. 56, Blk. 1, H.T.&B. Sur., 3,400-ft. test, cored 3,285-3,302 ft., recovered sand showing oil, set casing, drilled plug, 800 ft. oil in hole, 5½-in. at 3,271 ft., swabbing and flowing by heads 3,202 ft., S.D. 3,312 ft.
General Crude Oil 12 Flanigan, center of old Royston field, Ordovician test, drill pipe froze at 5,499 ft., T.D., S.D.O.

Hamilton County

A. J. Caldwell 1 W. W. Jones, 1,002 ft. from NE, 150 ft. from SE lines, W. H. Crowder Sur. Drilling past bit 2,999 ft.
C. J. Meyers 1 Oats, 420 ft. from S and 1,035 ft. from E lines, F. Hughes Sur., 4,000-ft. test. Top Mississippian lime 3,827 ft., top Ellenburger 3,839 ft., flowing water into pits, no oil.
Falls Ref. Co. (formerly Wallace & Vickers) 2 Lund, C S½ of 20 acres of N½ of SW¼, R. J. Bailey Sur. 51, top Marble Falls 3,245 ft., show oil 3,260-65 ft., 6⅝-in. 3,256 ft., show oil 3,392-3,400 ft., live green oil 3,428-38 ft. and 3,458-62 ft., T.D. 3,615 ft. in water, P.B. to 3,290 ft., swabbing 2 bbl. oil and 6 bbl. water per day, drilling 3,709 ft.
Gunther & Smith 1 Thompson, 467 ft. from SE and 4,533 ft. from SW lines of Rhody Kennedy Sur., spudded and S.D.
Hensley & Watson 1 Manning, 467 ft. from W and 2,500 ft. from S lines of Agapo Gaithan Sur., rotary on location.
Bob Waters 1 Oates, 3,350 ft. from SE and 8,450 ft. from NE lines of F. Hughes Sur., S.D. 350 ft., may change operators.

Jones County

C. W. and W. L. Snoddy 1 Jackson, 3,400 ft. from S and 330 ft. from E lines of J. McGrew Sur. 245, 1,950-ft. test. Drilling 410 ft.
Pearson 1 Carlson, SE W½ N½ Sec. 1, Blk. 5, H.&T.C. Sur., Palo Pinto test, S.D.O. 3,501 ft.
Danciger O. & R. 1 Kelso, SW cor. Lot 82, De Witt County School Lands Sur. 126, oil sand 2,236-39 ft., preparing complete as discovery.
G. M. Gillespie 1 J. T. King, 990 ft. from N and 330 ft. from E lines of NW Sec. 53, O.A.L. Sur., drilling 2,215 ft.
Humble 2 Sears, 467 ft. from S and W lines of Sec. 37, Blk. 18, T.&P. Sur., drilling 2,610 ft.

McCulloch County

W. J. Dillard 1 E. B. Garrett, 467 ft. from N and E lines of Sur. 934, Abst. 1196, 3,000-ft. test, location.

Menard County

Harry Baldwin 1 Leggett, SW SW Sec. 1, B.S.&F. Sur., S.D. casing 1,040 ft.

Nolan County

Arthur Harvey 1 L. N. McRee, SW NE Sec. 43, Blk. 19, T.&P. Sur., drilling 4,670 ft.

Palo Pinto County

Cole & Davis 1 Rogers, 467 ft. from S and E lines, Sec. 894, T.E.&L. Sur., T.D. 1,002 ft., running 8¼-in. casing.
Georgian Oil 1 Weldon, A. J. Smith Sur., Abst. 383, S.D.O. 1,425 ft.
E. Guyer 1 Dalton, L. B. Dayton Sur., Abst. 153, show gas 3,827-53 ft., show oil and gas 3,879-91 ft., bailing live oil, some water coming in behind 8¼-in. casing at 1,930 ft., T.D. 3,851 ft., corrected by steel-line measurement.
Elgin & Watson 1 Watson, NE NW Sec. 10, Blk. 2, T.&P. Sur., S.D. 4,065 ft.

Runnels County

A. J. Johnson 1 Bert Fletcher, E. W. Bull Sur. 333, 5,500-ft. test, S.D. 515 ft.

Shackelford County

Roeser-Pendleton 1-A-118 Cook, SE SW Sec. 118, E. T. Sur., 2,000-ft. test. Est. 1,500,000 cu. ft. gas 1,368-75 ft., water sand 1,490-1,504 ft., drilling 1,595 ft.
Georgian Oil Corp. 2 Blach, 1,290 ft. from SE and 540 ft. from SW lines, Sec. 301, T.E.&L. Sur., deep test, spudded and S.D.
Choate 1 Green, 150 ft. from N and W lines of N½ SE Sec. 61, Blk. 12, T.&P. Sur., drilling 920 ft.
R. T. Nail 1 Cook, 150 ft. from N and W lines of SE SW Sec. 53, E.T. Sur., spudded and S.D.

Taylor County

Ce-Beth Oil 1 City of Abilene, south shore of Lake Abilene on city property, 4,000-ft. test, running 10-in. casing 2,300 ft.

Indiana Fields

(Continued from Page 64)

Jay County

A. M. Jones 1 White.....NE NE NE 25-24n-12e
Set 8¼-in. 192 ft., drilling 255 ft.

Martin County

Collier & Burton 1 Swayze.....NW NE NE 10-3n-4w
Golconda 212-25 ft., Barlow 292-312 ft., Cypress 317-408 ft., show oil 330-35 ft. and 365-86 ft., Renault 447 ft., Ste. Genevieve 480 ft., water 551 ft., H.F.W. 596-603 ft., drilling 636 ft.

Pike County

F. J. Ellison 1 Goldmeyer.....SW SW NE 11-3s-7w
Drilling 270 ft.
P. W. Harr et al 1 Burnett.....SW NW NE 26-2s-8w
Ste. Genevieve 1,690-1,700 ft., show oil 1,700-03 ft. through H.F.W., will underream casing, T.D. 1,703 ft.

Posey County

Ed. Holman et al 1 Oeth.....NE SE NE 6-4s-13w
S.D. 2,981 ft. until after Jan. 1, 1941.
Anderson et al 1 Foul.....NE NE SE 11-4s-14w
Set 10-in. 135 ft., drilling 1,930 ft.

Spencer County

C. E. Dice 1 Lorch.....SW NW SW NW 12-6s-4w
Location.
Doris McPherson 1 Nichols.....SW NW NW 10-8s-6w
Set 6-in. 924 ft., S.D. 955 ft.
J. C. Ellis et al 1 Spence.....SW NW SE 29-7s-6w
Drilling 450 ft.

Steuben County

C. C. Goff 1 Robertson.....SE SE SE 26-36n-13e
Trenton 730 ft., H.F.W. 760 ft., drilling 960 ft.

Sullivan County

W. J. Reynolds 1 Poe.....NE NE SW 3-8n-10w
Drilling 1,235 ft.

Vigo County

H. N. Oakley 1 Seibold.....NW NW SW 18-3n-8w
New Albany 1,439 ft., set 6-in. 1,440 ft., Devonian 1,536 ft., H.F.W. 1,571 ft., drilling 1,675 ft.
Sage & Farley 1 Campbell.....S½ NE NW 24-11n-8w
Rigging up machine.

Canadian Fields

(Continued from Page 66)

West-Central field: Argus Royalties 2, LSD 3, 25-19-3w5, building derrick.

Tests in the Foothills

Clearwater structure: Ram River Oils 2, 1-37-11w5, Devonian limestone below 2,004 ft. after getting two small gas shows 1,900-80 ft.
Moose dome: McColl-Frontenac 1, LSD 9, 6-23-6w5, drilling at 2,037 ft.
Sheppard Creek: Alberta Pacific Consolidated-McDougall-Segur 1 joint test, LSD 6, 7-16-2w5, water intrusion in the Madison lime, dry, 6,000 ft., T.D.

Will Test the Quaich

Can-Albion Petroleums, Ltd., of Vancouver, B. C., has made location on the Quaich structure, in the southern Alberta foothills, in LSD 5, 23-9-3w5. Standard drilling rig of the Mar Jon Oil Co. will be moved from Whiskey Creek, north of Turner Valley, and test will spud early in the spring. The structure, in southwestern Alberta north of Coleman, has been favorably geologized by E. H. Cunningham-Craig of London, England.

Border Fields

In the Lethbridge area, southern Alberta, Lethbridge Petroleums 1, LSD 12, 11-8-22w4, encountered gas at 3,225 ft., the flow increasing till drilling was suspended in the lower Colorado at 3,282 ft. High-pressure valves are being installed and production tested. Test is logging higher than other wells in the area, and will be deepened about 700 ft. to the limestone, where oil is expected.

Steveville Test

In the Steveville field, east of Calgary, Standard of British Columbia 2 Princess, LSD 3, 13-20-12w4, discontinued drilling in the Devonian limestone at 4,250 ft., after encountering sulfur water between 3,960 and 4,027 ft. The 7-in. casing has been run to 3,220 ft. and shows encountered in the upper horizons are being tested.

Ontario Completion

In Middleton Township, Norfolk County, Ontario, C. A. Simpson 1, J. W. Mabee farm, finished with initial production of 750,000 cu. ft. a day. Production will be taken by the Dominion Natural Gas Co.

MICHIGAN OPERATIONS

Gas Production at Peak as Oil Output Declines

By OTTO C. PRESSPRICH

SAGINAW, Mich., Dec. 30.—Christmas week brought a lull in Michigan oil development, only 12 completions being recorded, the only one of consequence being a 400-bbl. well in Bloomingdale Township, Van Buren County.

Drilling operations also were featureless. A new derrick was under construction at the 1 Bateson deep test of Gulf Refining Co., in Monitor Township, Bay City, but resumption of drilling at the scene of the recent spectacular gas-well explosion and fire will not begin until some time in January. Company officials said the gas pressure now is backpressured to an output of about 4,500,000 cu. ft. a day.

SUMMARY OF COMPLETIONS

	No.	Bbl.	Footage
Oil wells:			
Allegan County	2	75	2,948
Van Buren County	1	400	1,190
Other	1	20	2,990
Dry holes:			
Allegan County	2	.....	2,956
Van Buren County	2	.....	2,370
Other	4	.....	9,297
Total	12	.....	21,751

The first quotation on Bay's Monitor oil (sweet crude), produced by the few oil wells in the area of the Bateson deep test, was posted last week by Simrall Corp. of Mount Pleasant. The price was set at $1.10 a barrel.

Records of the Michigan Conservation Department indicate that Michigan set a record of 14,000,000,000 cu. ft. of natural-gas production in 1940 with the development of new gas fields in Clare, Osceola and Missaukee counties, which will increase production further when pipe lines are available. Oil production, however, has had one of its lean years, the estimate being the 1940 output will be something over 19,000,000 bbl., compared with the 1939 record of 23,500,000. Drilling permits also were reduced in total, from 1,465 in 1935 to about 1,120 for 1940.

AVERAGE DAILY PRODUCTION

	Dec. 28	Dec. 21
Temple	9,854	9,603
Buckeye	1,942	1,879
Walker	6,027	5,876
Van Buren County	2,667	2,469
Allegan County	7,118	6,898
Wise	1,625	1,639
Adams	2,315	2,284
Total Michigan	42,145	41,780

While declaring Michigan's proven oil reserve declined during the year, the department's geology division asserted that failure to locate important new reserves during the year, which was blamed for the production decline, does not mean discovery prospects are exhausted.

They added that oil exploration has proceeded at a faster rate since May 1939, when the present oil-conservation law went into effect, than in the preceding 17 months.

The past week's issue of drilling permits totaled 18, bringing the number for the year to 1,104, Allegan leading with four locations while Ottawa and Van Buren each had two. Others went to Saginaw, Bay, Clare, Isabella, Midland, Arenac and Muskegon.

MICHIGAN COMPLETIONS

Allegan County

Manlius Township: Robert C. Lentz 1 Gun Club, SW SW NW 26-3n-15w, dry, T.D. 1,421 ft.

Overisel Township: Red-Man Oil Co. et al 1 Busscher, NE SW NW 16-4n-14w, dry, T.D. 1,535 ft.

Salem Township: George L. Kernodle 1 Ledger, SE NW NW 14-4n-13w, 25 bbl., acid, T.D. 1,595 ft.

Trowbridge Township: W. Spencer Cook 1 Morgan, SE SE NW 29-1n-13w, 50 bbl., acid, T.D. 1,353 ft.

Arenac County

Adams Township: Don Rayburn 1 U.S.A., SE SW SE 15-19n-3e, dry, T.D. 3,047 ft.

Don Rayburn 2 Marsh, SW NW NE 26-19-3e, 20 bbl., acid, T.D. 2,990 ft.

Isabella County

Fremont Township: Belvidere Oil Co. 1 Erskin, NW SW SE 22-13n-5w, dry, T.D. 1,266 ft.

(Continued on Page 77)

MISSISSIPPI AND SOUTHEAST

Mississippi Activity at Low Level as Year Ends

By GEORGE WEBER

JACKSON, Miss., Dec. 30.—The holiday lull descended last week on Mississippi and Alabama, and wildcatting activity, already at a comparatively low ebb, compared to this time a year ago, was almost at a standstill. There are 14 tests drilling in the two states, included in a total of 35 actual operations which embraced 17 tests shut down.

Geophysical units in the two states remained at 32. A wildcat in Walker County, Alabama, was abandoned after fruitless testing of a gas showing from 2,100 to 2,200 ft. This is Champlin Producing Co. 1 Galloway Coal Co. in C SW of 12-13s-10w, which had drilled to 4,813 ft. and then plugged back to the 2,200-ft. level.

The only producer was Union Producing Co. 6 Perry, which pumped at the rate of 600 bbl. daily to become Tinsley dome's 104th oil well.

To Deepen Test

Henderson Oil & Gas Co. announced plans to deepen 1 Columbia in SW NW 36-21n-5e, Montgomery County, drilled to 3,473 ft. in Tuscaloosa. Despite the holiday period some leasing activity was under way.

Hassie Hunt of Dallas continued to add to his 5,500-acre block in Township 5n, Range 4w, Hinds County. Near Clinton in the same county, Hammett et al took a 5,500-acre block in Township 6n, Range 1w. George Wallace assigned a 4,000-acre block in Townships 6s and 7s, Ranges 7w and 8w, Panola County, to Ivan Mitkiewics of Chicago. Jack Coast assigned a 9,000-acre block in Lauderdale County, Township 8n, Range 14e, to Magnolia Petroleum Co. W. M. Vaughey leased 1,100 acres in Jefferson County. S. P. Borden secured 2,000 acres on assignment from H. L. Hunt in Townships 2s and 3s, Ranges 11w and 12w, Stone County. Humble Oil & Refining Co. leased over 1,000 acres in Township 4n, Range 3w, Wilkinson County.

Tank Shipments Strong

Tank-car shipments of crude at Tinsley dome showed some increase last week mounting to 415 cars with a total of 100,200 bbl. Allied Pipe Line Co. at St. Elmo, Ill., is reported getting a considerable amount of this oil. E. C. Johnston of Longview, Tex., who owns a number of wells at Tinsley dome, is among the operators selling to this company.

Peninsular Oil & Refining Co., said to be a subsidiary of Humble Oil & Refining Co., has closed a 15-month geophysical option on 1,035,000 acres of Barron G. Collier fee land in Collier County, Florida.

Humble continued leasing in South Alabama, taking 4,000 acres more in Baldwin County and 9,500 acres in Mobile County, the latter being for the most part Tensas Delta Lumber Co. fee.

MISSISSIPPI COMPLETION

Tinsley field: Union 6 Perry .. 24-19-3w Pumped 600 bbl. at 4,627 ft.

ALABAMA COMPLETION

Champlin 1 Galloway Coal Co. ..... SW 12-13-10w Dry, T.D. 4,813 ft., P.B. to test gas show 2,100-2,200 ft.

NEXT STOP ST. LOUIS!

AND MY STOP IS HOTEL Mayfair!

TOPS IN FOOD & SERVICE - AND RIGHT DOWNTOWN

ALL ROOMS WITH BATH . RADIO RECEPTION

For WINTER Drilling

—an aid to the Crew

"One of the real values of the Patterson-Ballagh Pipe Wiper is in winter drilling when the temperature is below freezing," reports a West Texas Operator. "It prevents ice from collecting on the pipe. The men do not get their gloves wet and frozen. We don't have trouble with a frozen water line on the derrick floor because there is no need of washing the pipe. The crew can work faster. And then there is a big saving in mud. It isn't diluted with wash water."

Save on drilling costs

Unnecessary to wash pipe. Keeps floor clean. Saves water and mud.

Made in sizes to fit all Drill Pipe

PATTERSON-BALLAGH PIPE WIPER

Made from same grade of tough rubber as Patterson-Ballagh Protectors.

See Composite Catalog

PATTERSON-BALLAGH CORPORATION

LOS ANGELES • HOUSTON • NEW YORK CITY

CRUDE-OIL PRICES . . .

Oklahoma, Kansas, North Central and East Central Texas

East Texas (Oct. 11, 1938)* $1.10
Sinclair Prairie Oil Marketing Co. October 2, 1939. De Soto Pipe Line October 2, 1939. Cities Service Co. October 5, 1939. Shell Oil, Inc., October 5, 1939.
Van, Tex. (Oct. 11, 1938)* $0.93
Talco, Tex. (Oct. 2, 1939)* ..... .65
Rodessa, Tex. .....
See North Louisiana gravity schedule
Cass and Panola counties, Texas ..
See note below
Altus and Tipton† ..... See note below
Cayuga, Tex. (Oct. 2, 1939) $0.78
Clay Creek, Tex. ..... .85
Long Lake, Tex. (Jan. 20, 1940) ... 1.08

*Humble Oil & Refining Co. †Gulf Refining Co. Pure Oil Co.'s Van price, 93 cents, effective Oct. 13, 1938.

Cass and Panola counties, Texas, effective October 12, 1938, by Magnolia Petroleum Co., same as North Louisiana prices in Column 5 gravity schedule.

Altus and Tipton, Oklahoma, starting at below 25° at 71 cents, 2-cent spread to 40° and above at $1.03. Cayuga posted by Pan American Pipe Line Co. Clay Creek by Sun Oil Co. Long Lake by Sinclair Oil Marketing Co.

West Texas

See gravity table.
Fisher County, Texas (Apr. 1, 1939)
See note below
Pecos County (Oct. 11, 1938)* $0.78
Pecos shallow (Oct. 11, 1938)† ..... .65

*Shell Oil Co., Inc., Gulf Pipe Line Co. and Humble Oil & Refining Co. †Shell Oil Co., Inc.

Fisher County, Texas, by Shell Oil Co., Inc., below 25°, 68 cents; 25°, 70 cents, with 2-cent spread to 40° and over at $1.

NORTH LOUISIANA AND SOUTHERN ARKANSAS

(Posted by Standard Oil Co. of Louisiana, Stanolind Oil & Gas Co., Lion Oil Refining Co. and Arkansas Fuel Oil Co.)

(Effective 7 a.m. October 17, 1940)

	1	2	3	4	5
Below 21 ..	$.55	...	...	$.75	$.91
21-21.9	.57	...	...	.77	.93
22-22.9	.59	...	...	.79	.95
23-23.9	.61	...	...	.81	.97
24-24.9	.63	$.73	$.83	.83	.99
25-25.9	.65	.75	.85	.85	1.01
26-26.9	.67	.77	.87	.87	1.03
27-27.9	.69	.79	.89	.89	1.05
28-28.9	.71	.81	.91	.91	1.07
29-29.9	.73	.83	.93	.93	1.09
30-30.9	.75	.85	.95	.95	1.11
31-31.9	.77	.87	.97	.97	1.13
32-32.9	.79	.89	.99	.99	1.15
33-33.9	.81	.91	1.01	1.01	1.17
34-34.9	.83	.93	1.03	1.03	1.19
35-35.9	.84	.94	1.04	1.04	1.20
36-36.9	.85	.95	1.05	1.05	1.21
37-37.9	.86	.96	1.06	1.06	1.22
38-38.9	.87	.97	1.07	1.07	1.23
39-39.9	.88	.98	1.08	1.08	1.24
40 and above	.89	.99	1.09	1.09	1.25

Column 1 applies to Atlanta, Buckner, Magnolia, Schuler (Jones sand and Reynolds lime) and Village fields.

Column 2 applies to Caddo, De Soto, Sabine, Fouke, Homer, Miller County, Sugar Creek, El Dorado (West, South and Rainbow) and Schuler (Morgan sand).

Column 3 applies to Bunkie, Eola and Olla.

Column 4 applies to Bayou Des Glaise, Bayou Mallet, Choctaw, Darrow, Jeanerette, Lirette, North Crowley, Port Barre, Potash, Roanoke and St. Martinville.

Column 5 applies to University (Baton Rouge).

Big Creek, Dorcheat, McKamie distillates (sour)	$.95
Smackover (heavy)*	.73
Cotton Valley distillate	1.10
Cotton Valley crude	1.05
Cottor Valley (Holloway sand crude)	1.10
Rodessa, Shreveport (Cross Lake)	1.05
Schuler (Morgan sand), El Dorado and Rainbow	.73-1.05
Tullos and Urania	.89
Lisbon, La. (Apr. 29, 1939)	.66-.82

Note—Stanolind purchases in Caddo Parish only.

*Smackover posted by Magnolia Petroleum Co., Oct. 12; by Gulf Refining Co., Oct. 13; McMillan Refining Co. and Cross Refining Co. met price. Tullos and Urania posted by Hunt Oil Co.

In the Lisbon, Louisiana, field, effective Sept. 14, 1939, Gulf Refining Co. and Caddo Crude Oil Purchasing Co. posted 27-27.9°, 66 cents, with 2 cents added for each degree up to 35 and over at 82 cents.

Gulf Coast

Seabreeze, Willow Slough, and LaBelle, Tex. (Sept. 14, 1938)*** $1.10
Conroe, Tex. (Oct. 11, 1938)* 1.27
Black Bayou and White Castle, La. (Oct. 11, 1938)‡ ..... See note below
Gibson, La. (Oct. 11, 1938)† $1.04
Garden Island, La. (Oct. 12, 1938)‡ . 1.24
Lafitte, La. (Oct. 12, 1938)‡ 1.04
Cleveland, Tex. (Oct. 12, 1938)¶ 1.14
Hardin, Tex. (Sept. 14, 1939)* 1.10
Tepetate, La. (Oct. 11, 1938)‖ 1.03
Ville Platte, La. (Oct. 11, 1938)§ 1.03
Abbeville, La. (Jan. 1, 1939)‖ .....
See note below
Bosco, La. (Dec. 3, 1938)‖ $0.93
Creole, La. (Oct. 13, 1938)‖ ..... .96
Vinton, Edgerly, Starks, Hackberry, Timbalier Bay, Quarantine Bay, and Grand Bay, La. (Oct. 2, 1939)**
Segno and Wing (Oct. 2, 1939)**
See note below
Happytown, La. (Jan. 12, 1940)† .. 1.00
Livingston (Oct. 11, 1938)† $1.10

*Humble Oil & Refining Co. †Shell Oil Co., Inc., ‡Texas Co. §Continental Oil Co. ‖Pure Oil Co. ¶Magnolia Petroleum Co. **Gulf Refining Co. ***Sun Oil Co. Hardin prices by Humble and Sun companies.

Black Bayou, etc., starts at below 20° at 79 cents; 20°-20.9°, 81 cents; 21°-21.9°, 83 cents; then a 3-cent spread to 26°-26.9°, 98 cents; then a 2-cent spread at 40° and over at $1.14. Abbeville starts at below 36°, 92 cents; 2-cent spread to 40° and over at $1.02. Segno and Wing take Gulf Refining Co.'s Gulf Coast prices. Vinton, Edgerly, etc., schedule starts at below 20°, 86 cents, 2-cent spread to 34° and above at $1.16. Shell Oil Co., Inc., withdrew as a purchaser in the Schwab-Wilcox area, Texas, on Apr. 8, 1940.

Hackberry, East and West, effective October 2, 1939, by Stanolind Oil & Gas Co. Below 20 gravity 86 cents, 2 cents added for each degree up to 34° and over at $1.16.

Iowa, La., effective October 11, 1938, by Shell Petroleum Corp. and on April 1, 1939, by Shell Oil Co., Inc.: Below 18°, 75 cents; 18°-18.9°, 77 cents; 2-cent spread to 21°-21.9° at 83 cents; then a 3-cent spread to 26°-26.9° at 98 cents; then a 2-cent spread to 34° and above at $1.14.

Southwest Texas

Salt Creek, Darst Creek, Hilbig, Carroll, Clark and Zoboroski (Oct. 11, 1938)* $0.96
Pettus (Oct. 11, 1938)* 1.29
Flour Bluff (Dec. 3, 1938)* 1.23
Jim Wells County (Oct. 2, 1939)* ... 1.23
Darst Creek (Oct. 12, 1938)† ..... .96
Darst Creek and Bruner (Oct. 13, 1938)‡ $0.96
Luling (Oct. 12, 1938)† ..... .87
Lytton Springs (Oct. 12, 1938)† ..... .99
Mirando (Oct. 12, 1938)† .....
Government Wells (Oct. 13, 1938) ..
See note below

*Humble Oil & Refining Co. †Magnolia Petroleum Co. Pettus price adopted by

Crude Prices by Gravities

Gravity—	Oklahoma and Kansas 1	Oklahoma and Kansas 2	Oklahoma and Kansas 3	North and Central Texas 4	Louisiana and Arkansas 5	East Central Texas 6	Gray County, Texas 7	Carson and Hutchinson Counties, Texas 8	West Texas, and Lea County, N. M. 9	Raccoon, Satsuma, and Tomball, Texas 10	Gulf Coast 11	Anahuac, Dickinson, Texas 12	Refugio, Texas 13	Mirando-Duval, Beaumont-West Beaumont, Texas 14	Golden Meadow, Louisiana 15	Lockport, Iowa, Cameron Meadows, Louisiana 16	Gueydan, Vermilion Parish, Sweet Lake, Cameron Parish 17	Artesia, Jackson, Maljamar, N. M. 18
Below 18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	$.74	...	...
18-18.9	...	...	...	...	...	...	...	...	$.53	...	...	...	...	...	...	.76	...	...
19-19.9	...	...	...	...	...	...	...	...	.53	...	$.86	$.81	$.91	$.86	...	.78	...	...
20-20.9	$.70	...	$.60	...	...	...	...	...	.55	...	.88	.83	.93	.88	...	.80	.86	...
21-21.9	.72	...	.63	...	...	...	...	...	.57	...	.90	.85	.95	.90	...	.82	.88	...
22-22.9	.74	...	.66	...	...	...	...	...	.59	$.95	.92	.87	.97	.92	...	.85	.90	...
23-23.9	.76	...	.69	...	...	$.78	...	...	.61	.97	.94	.89	.99	.94	...	.88	.92	...
24-24.9	.78	...	.72	$.71	$.73	.80	...	...	.63	.99	.96	.91	1.01	.96	$.90	.91	.94	...
Below 25	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.96	...
25-25.9	.80	$.58	.75	.73	.75	.82	...	...	.65	1.01	.98	.93	1.03	.98	.90	.94	.98	...
26-26.9	.82	.63	.78	.75	.77	.84	...	...	.67	1.03	1.00	.95	1.05	1.00	.90	.97	1.00	...
27-27.9	.84	.68	.81	.77	.79	.86	...	...	.69	1.05	1.02	.97	1.07	1.02	.90	.99	1.02	...
28-28.9	.86	.73	.84	.79	.81	.88	$.72	$.67	.71	1.07	1.04	.99	1.09	1.04	.90	1.01	1.04	$.61
29-29.9	.88	.78	.87	.81	.83	.90	.74	.69	.73	1.09	1.06	1.01	1.11	1.06	.90	1.03	1.06	.63
30-30.9	.90	.82	.90	.83	.85	.92	.76	.71	.75	1.11	1.08	1.03	1.13	1.08	.90	1.05	1.08	.65
31-31.9	.92	.86	.92	.85	.87	.94	.78	.73	.77	1.13	1.10	1.05	1.15	1.10	.92	1.07	1.10	.67
32-32.9	.94	.90	.94	.87	.89	.96	.80	.75	.79	1.15	1.12	1.07	1.17	1.12	.94	1.09	1.12	.69
33-33.9	.96	.96	.96	.89	.91	.98	.82	.77	.81	1.17	1.14	1.09	1.19	1.14	.96	1.11	1.14	.71
34-34.9	.98	.98	.98	.91	.93	1.00	.84	.79	.83	1.19	1.16	1.11	1.21	1.16	.98	1.13	1.16	.73
35-35.9	1.00	1.00	1.00	.93	.95	1.02	.86	.81	.85	1.21	1.18	1.13	1.23	1.18	1.00	....	1.18	.75
36-36.9	1.02	1.02	1.02	.95	.97	1.04	.88	.83	.87	1.23	1.20	1.15	1.25	1.20	1.02	....	1.20	.77
37-37.9	1.04	1.04	1.04	.97	.99	1.06	.90	.85	.89	1.25	1.22	1.17	1.27	1.22	1.04	....	1.22	.79
38-38.9	1.06	1.06	1.06	.99	1.01	1.08	.92	.87	.91	1.27	1.24	1.19	1.29	1.24	1.06	....	1.24	.81
39-39.9	1.08	1.08	1.08	1.01	1.03	1.10	.94	.89	.93	1.29	1.26	1.21	1.31	1.26	1.08	....	1.26	.83
40 and over	1.10	1.10	1.10	1.03	1.05	1.12	.96	.91	.95	1.31	1.28	1.23	1.33	1.28	1.10	....	1.28	.85

Column 1—Effective October 17, 1938, by Standard Oil Co. of Indiana. By Gulf Refining Co., October 13, 1938. Carter Oil Co. schedule and prices same from 30° upward, but on lower gravities pays below 21° 60 cents, with 3 cents added for each degree up to and including 29-29.9°, effective October 13, 1938. Gulf Oil Corp. starts at below 25° 78 cents, October 13, 1938. Texas Co. schedule starts at 28-28.9° at 86 cents. Pure Oil Co. same as Standard of Indiana's schedule, effective October 14, 1938.

Column 2—Sinclair Prairie Oil Marketing Co. February 16, 1939.

Column 3—Magnolia Petroleum Co. effective October 12, 1938; Shell Petroleum Corp., October 22, 1938; Shell Oil Co., Inc., April 1, 1939.

Column 4—Effective December 3, 1938, by Humble Oil & Refining Co. in Central Texas. By Magnolia Petroleum Co. in East Central and in North and Central Texas, excepting that it starts at below 29° at 79 cents, effective December 3, 1938. Texas Co. in North and Central Texas, same as Magnolia's but effective October 12, 1938. Gulf Refining Co. same as Magnolia's, effective October 13, 1938. Stanolind Oil Purchasing Co. in North Texas, schedule starts at below 21°, 63 cents, with a 2-cent spread upward to 40° and over at $1.03, effective September 1, 1940.

Column 5—Gulf Refining Co., October 13; Texas Co. October 12.

Column 6—Humble Oil & Refining Co., October 11, 1938.

Column 7—Humble Oil & Refining Co., effective December 3, 1938. Sinclair Prairie Oil Marketing Co., October 11, 1938. Texas Co. quotes "Panhandle sweet crude," beginning with 34-34.9°, at 84 cents, with 2-cent spread to 40° and over at 96 cents, and "Panhandle sour crude," 79 cents for 34-34.9°, with a top of 91 cents for 40° and over, effective October 12. Magnolia Petroleum Co. met Humble prices throughout, effective December 3. Gulf Refining Co. quotes "Panhandle sweet crude" at below 29°, 72 cents with a 2-cent spread, and a top price of 96 cents for 40° and above, and "Panhandle sour crude" below 29°, 67 cents, with a top of 91 cents for 40° and above effective October 13. Phillips Petroleum Co. schedule for sweet crude in Gray, Carson, and Hutchinson counties, starts at below 29°, 72 cents, with a spread of 2 cents up to 96 cents for 40° and over, effective February 7, 1939.

Column 8—Humble Oil & Refining Co., effective December 3, 1938. Sinclair Prairie Oil Marketing Co., October 11, 1938. Texas Co. quotes "Panhandle sweet crude" at 34-34.9°, 84 cents, with a top of 96 cents for 40 gravity, and "Panhandle sour crude" at 34-34.9°, 79 cents, with a top of 91 cents for 40° and over, effective October 12. Gulf Refining Co. quotes "Panhandle sweet crude" at below 29°, 72 cents, with a top of 96 cents for 40° and over and "Panhandle sour crude" at below 29°, 67 cents, with a top of 91 cents for 40° and above, effective October 13. Phillips Petroleum Co. schedule for sour crude in Carson, Moore, and Hutchinson counties, starts at below 29° at 67 cents, with a spread of 2 cents up to 91 cents for 40° and over, effective February 7, 1939.

Column 9—Humble Oil & Refining Co., effective October 11, 1938. Texas Co. schedule starts at below 26°, 65 cents, and ends at 36° and over at 87 cents, effective October 12. Gulf Refining Co. starts at below 26° at 65 cents and ends at 40° and over at 95 cents, effective October 13. Magnolia Petroleum Co. schedule starts below 25°, 63 cents, and ends at 40° and above at 95 cents, effective October 12. Sinclair Prairie Oil Marketing Co. schedule same as that of Magnolia, effective October 11, but revised on March 24, 1939, to stop at 36° and over at 87 cents. Stanolind Oil Purchasing Co. schedule same as that of Humble, effective October 11. Stanolind Oil & Gas Co. (Winkler County) starts at below 26°, 65 cents, with a 2-cent spread, and a top of 95 cents for 40° and above, effective October 11, 1938. Effective September 1, 1939, Shell Oil Co., Inc., posted Yoakum County crude, starting at below 20°, 53 cents, with 2 cents added for each degree up to 36° and over at 87 cents. Effective March 31 Atlantic Refining Co. added Gaines Cou ty to its price schedule.

Column 10—Humble Oil & Refining Co., effective October 11, 1938. Magnolia Petroleum Co., in Tomball, effective October 12.

Column 11—Effective October 2, 1939, by Humble Oil & Refining Co. in Texas Coast. By Sinclair Prairie Oil Marketing Co. in Texas Coast, October 3, 1939. By Texas Co. at $1.16 in Texas and Louisiana Coast, October 2, 1939, schedule stopping at 34° and over. By Sun Oil Co. in Texas and Louisiana Coast, October 2, 1939. By Gulf Refining Co. in Louisiana October 2, 1939, excepting that schedule stops at $1.16 for 34° and above. By Gulf Refining Co. in Texas, effective November 1, 1939.

Column 12—Effective by Humble Oil & Refining Co. October 2, 1939. By Sun Oil Co. in Anahuac, October 2, 1939. By Gulf Refining Co. in Anahuac, October 2, 1939. On November 1, 1939, Gulf Refining Co. applied these prices to Anahuac, Hull (New), Pierce Junction, Orange, Thompson (deep).

Column 13—Effective October 2, 1939, by Humble Oil & Refining Co. and Continental Oil Co. By Texas Co. up to 28° and over at $1.09 October 2, 1939. Atlantic adopted Humble price schedule November 7, 1939, in Refugio and applied it also to Greta.

Column 14—Effective October 2 by Humble Oil & Refining Co. By Sun Oil Co. in Mirando alone, stopping at 24-24.9° at 96 cents. By Stanolind Oil & Gas Co. in West Beaumont, alone, October 2, 1939. Gulf Refining Co. in West Beaumont, October 2, 1939. By Magnolia Petroleum Co. in Beaumont, October 2, 1939. By Texas Co. in Duval and Mirando, stopping at 28-28.9° at $1.09. Continental Oil Co. in Mirando and Duval, October 2, 1939.

Column 15—Effective October 2, 1939, by Texas Co.

Column 16—Magnolia Petroleum Co., effective October 12, 1938.

Column 17—Pure Oil Co., effective October 2, 1939.

Column 18—Continental Oil Co., effective October 11, 1938.

Atlantic Crude Oil Purchasing Co. ‡Gulf Refining Co.

Government Wells posted by Sun Oil Co. starts at 20° at 77 cents, 3-cent spread to 24°-24.9° at 88 cents.

Middle Western States

OHIO OIL CO.
(Effective August 21 and 23, 1940)

Illinois old fields	$1.00
Illinois basin	1.15
Illinois (Storms field) (Nov. 1, 1940)¶	1.05
Princeton, Ind.	1.00
Western Kentucky (Aug. 21, 1940)†	1.10
Birk City, Ky. (June 9, 1939)¶	.90
Corydon, Ky. (June 9, 1939)	.90
Greendale, Porter, Crystal and Wise, Mich. (Aug. 24, 1940)*‡	1.12
Buckeye, Bentley, Edenville, Beaverton, Mich. (Aug. 24, 1940)*	1.10
Freeman-Redding, Mich. (Aug. 24, 1940)‡	1.07
Arenac, Mich. (Aug. 24, 1940)*	.92
West Branch, Mich. (Aug. 24, 1940)*	.92
Monitor (sweet crude), Bay County, Mich.*	1.10
Allegan-Kent and Ottawa, Mich. (Aug. 25, 1940)	1.18
Bloomingdale and Columbia, Mich. (Nov. 1, 1940)¶	1.18
Muskegon	1.00
Sherman and Freeman, Mich. (Aug. 25, 1940)‡	1.07
Eastern Kentucky:	
Big Sandy River (Aug. 21, 1940)†	1.12
Kentucky River (Aug. 21, 1940)†	1.20

*Simrall Corp. †Ashland Refining Co. ‡Pure Transportation Co. ¶Sohio Oil Co.

Bloomingdale posted by Tri-Lakes Corp. Kent County by Naph-Sol Refining Co. On May 25, 1940, Sohio posted $1 per barrel in the Griffin field in Gibson County, Indiana, and Wabash County, Illinois, and the North Griffin, South Griffin, Phillipstown, New Harmony and Irons in Wabash and White counties, Illinois. Allegan, Kent and Ottawa posted by Commonwealth Pipe Line Co.

Rocky Mountain States

Dry Creek, Wyo. (Oct. 11, 1938)*	$0.92
Elk Basin, Wyo. (Oct. 11, 1938)*†	.90
Grass Creek, light, Wyo. (Oct. 11, 1938)*†	.90
Grass Creek, heavy (Oct. 11, 1938)†	.40
Lance Creek, Wyo. (Oct. 11, 1938)*	.77
Rock Creek, Wyo. (Oct. 11, 1938)*	1.00
Iles, light, Colo. (Oct. 11, 1938)†	.98
Iles, heavy, Colo. (Oct. 11, 1938)†	.92
Dutton Creek, Wyo. (Oct. 11, 1938)†	See note below
Frannie, light, Wyo. (Oct. 11, 1938)†	$0.55
Frannie, heavy, Wyo. (Oct. 11, 1938)†	.42
Hamilton dome, Wyo. (Oct. 11, 1938)†	.35
	See note below
Midway, Wyo. (Oct. 11, 1938)†	
Salt Creek Tensleep Crude, Wyo. (Oct. 11, 1938)†	$0.646
Salt Creek (Oct. 11, 1938)	See note below
Canon City, Colo. (Oct. 11, 1938)‡	$0.90
Florence, Colo. (Oct. 11, 1938)‡	.90
Cut Bank, Mont. (Jan. 1, 1940)	1.00
Kevin-Sunburst, Mont. (Jan. 1, 1940)	.80
Cat Creek, Mont. (Oct. 11, 1938)‡	1.10
Big Muddy, Wyo. (Oct. 11, 1938)‡	.98
Lance Creek, Wyo. (Oct. 11, 1938)‡	.77
Lea County, New Mexico	See West Texas gravity schedule‡
Artesia, Jackson and Maljamar	See gravity table‡
Fort Collins and Wellington, Colo.	See note below
Eddy County, New Mexico (Oct. 11, 1938)§	$0.77

*Ohio Oil Co. †Stanolind Oil & Gas Co. ‡Continental Oil Co. §Sinclair Prairie Oil Marketing Co.

Dutton Creek and Salt Creek Tensleep crudes start at below 29°, 86 cents, 2-cent spread up to 40° and over at $1.10. Salt Creek crude, excepting Tensleep, takes Standard Oil Co. of Indiana's Oklahoma-Kansas prices. Stanolind Oil & Gas Co., effective Oct. 11, discontinued posting prices in Greybull-Torchlight, Wyoming, and Hogback and Hospah, New Mexico. In Fort Collins and Wellington, Colorado, effective Oct. 11, 1938, by Continental Oil Co. 28-28.9°, 81 cents, with 2 cents added for each degree up to 40° and over at $1.05. Cut Bank and Kevin-Sunburst posted by Producers Refining Co.

Eastern States

SOUTH PENN OIL CO.
(Effective December 17, 1940)

Pennsylvania Grade oil in National Transit lines (Bradford field)	$2.15
Pennsylvania Grade oil in Southwest Pennsylvania lines	1.80
Pennsylvania Grade oil in Eureka Pipe Line lines	1.74
Corning grade oil in Buckeye Pipe Line Co. line	1.12

TIDE WATER ASSOCIATED OIL CO. and NEW YORK TRANSIT CO.
(Effective December 17, 1940)

Bradford, Pa.	$2.15
Allegany, N. Y.	2.15

PENNZOIL CO.
(Effective December 17, 1940)

Group A	$2.08
Group B	2.07
Group C	2.06
Group D	2.05
Group E	2.03

QUAKER STATE OIL REFINING CORP.
(Effective December 17, 1940)

Southern Ohio (Pa. Grade):	
In Buckeye Pipe Line lines	$1.70
In Eureka Pipe Line lines	1.74

PURE OIL CO.
(Effective December 17, 1940)

West Virginia	$1.74

Canada

ONTARIO
(Nov. 6, 1939, by Imperial Oil, Ltd.)

Petrolia	$2.10
Oil Springs	2.07
Bothwell	2.10

TURNER VALLEY
(Sept. 12, 1940, by Imperial Oil, Ltd.)

Crude-oil price schedule starts at $1.08, for 33°-33.9°, including 2 cents for each degree gravity with top price for 64° and over 1.70

These prices f.o.b. producers' field tankage.

Michigan Fields

(Continued from Page 75)

Monroe County

Dundee Township: Jetter Drilling Co. 1 Morrison, NW NW SE 26-6s-6e, dry, T.D. 2,233 ft.

Ogemaw County

Klacking Township: Weber Oil Co. 1 Krug, SW NW SE 11-23n-2e, dry, T.D. 2,751 ft.

Van Buren County

Bloomingdale Township: J. H. Fitchett 1 Stasak, SE NW NW 7-1s-14w, 400 bbl., acid, T.D. 1,190 ft.

Clapsaddle & Harris 1 Fritz, SE NE SE 15-1s-14w, dry, T.D. 1,300 ft.

Lawrence Township: Smith Petroleum Co. 1 Northrup, NW NW SW 7-3s-15w, dry, T.D. 1,070 ft.

Forest City Basin

(Continued from Page 62)

Harper 1 Sibbernsen, SE NE NW 20-1n-16e, elevation 893 ft., topped the Hunton at 2,210 ft. and is making no water.

Harper 3 Sibbernsen, SW NE NW 20-1n-16e, 10 acres west, has 1 per cent water. Its elevation is 895 ft., and the Hunton top was 2,221 ft. Harper 2 Sibbernsen, 10 acres west of No. 3, has been making 50 per cent water, with the same elevation and same Hunton top as No. 3.

Harper 4 Sibbernsen, SW NW NW 20-1n-16e, the westernmost well of the Sibbernsen lease, went almost entirely to water and has been plugged for the time being. Its elevation is 895 ft. and the Hunton was topped at 2,242 ft.

The twenty-ninth well of the pool was R. L. Campbell 4 Schock, C SE SW 20-1n-16e, fairly well over to the west edge of the south part of the pool. The hole filled 1,900 ft. in 2 hours from the Hunton, 2,278-82 ft., and a pump is being installed. No acid is to be applied in fear of water intrusion.

What had been expected to be a well in the south part of the pool, Skelly 4 Wallraff, 440 ft. from the west line and 325 ft. from the south line NE SW 20-1n-16e, resulted in a spectacular failure. It had topped the Hunton at 2,210 ft., running higher than other Wallraff wells and saturation was reported, but when the plug was drilled, there was no oil. The test was to drill ahead to the Viola lime.

Ohio Oil Co. is digging cellar and pits for 6 Sandrock, SE NW NE SE 20-1n-16e, the first the company has started since it took over Richardson County properties of the Pawnee Royalty company.

Two and one-half miles north of production in the Falls City pool the Liberty Development Co. of St. Joseph had a Hunton lime failure. Its 1 William C. Fehr, NW SE 31-2n-16e, elevation 1,003 ft., topped Mississippi lime at 2,160 ft. and the Hunton at 2,576 ft. Total depth was 2,595 ft. Cores were very white and hard; porous, but dry.

W. H. Martgan 1 Smith, C NW NW 31-3n-16e, set pipe for a Hunton lime test, the test to be made after the first of the year. Hunton was topped at 2,513 ft. Total depth is 2,539 ft. Some saturation was found in the last of three cores.

In western Richardson County, southeast of Humboldt, M. M. Travis of Houston and A. S. Kaplan of Tulsa had a dry hole in the Wilcox sand at 1 Stauffer in SW SW NE 22-1n-13e. Electrical log showed Wilcox sand top at 3,137 ft. and Viola top at 2,768 ft. Elevation was 1,044 ft. This test was started in November 1939 by the Uhri Oil Co. and was taken over recently for completion with a rotary. Widespread reports last weekend that the test had found free oil in the Wilcox were promptly spiked by operators. The Wilcox carried only water.

Powers & Stalder 1 Lee, NE NW NE 16-1n-14e, a southwest diagonal offset to the old Arab Petroleum Co. 1 Ogle, had Lansing lime at 895 ft. and was drilling below 1,240 ft. Elevation is 1,071 ft.

In Nemaha County, Nebraska, Francis Krone was taking 1 Morehead on down to Arbuckle lime. Location is C SE NE 35-4n-16e, elevation 1,128 ft. The test was drilling tight below 3,000 ft.

Phillips Petroleum Co. has moved a seismograph from Nemaha County, Nebraska, to Shenandoah, Iowa, Page County.

STANDARD OIL CO. OF CALIFORNIA

Crude-oil prices at the well effective February 1, 1940

(All gravities above those quoted take highest price offered in that field)

Gravity—	Signal Hill (Long Beach) (El Segundo)	Wilmington	Seal Beach	Huntington Beach	Inglewood	Playa Del Rey	Olinda-Brea Canyon	Athens-Rosecrans	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Greeley-Canal	Cole's Levee Richfield Western	Mountain View	Elk Hills	Buena Vista, Midway-Sunset, Lakeview	Lost Hills	Coalinga	Kettleman Hills
14-14.9	$.65	$.60	$.64	$.63	$.64	$.65	$.61	...	$.65	$.61	$.61	$.62	$.63	...	...	...	...	$.60	$.60	$.60	$.60	
15-15.9	.65	.60	.64	.63	.64	.65	.61	...	.65	.61	.61	.62	.63	...	...	...	...	.60	.60	.60	.60	.
16-16.9	.65	.60	.64	.63	.64	.65	.61	...	.65	.61	.61	.62	.63	...	...	...	...	.60	.60	.60	.60	...
17-17.9	.65	.62	.64	.63	.68	.65	.61	...	.65	.61	.61	.62	.63	...	...	...	...	.60	.60	.60	.60	...
18-18.9	.65	.64	.64	.63	.71	.65	.65	...	.68	.61	.61	.62	.63	...	...	...	...	.60	.60	.60	.60	...
19-19.9	.69	.69	.64	.67	.75	.70	.69	...	.72	.61	.65	.62	.63	...	...	...	$.60	.64	.64	.64	.61	...
20-20.9	.73	.73	.64	.72	.79	.76	.74	..	.75	.65	.69	.62	.67	...	...	...	.60	.69	.69	.69	.62	...
21-21.9	.78	.78	.64	.76	.82	.81	.78	...	.79	.69	.73	.62	.72	$.63	...	...	.64	.74	.74	.74	.66	...
22-22.9	.82	.82	.69	.81	.86	.86	.82	...	.82	.73	.77	.66	.76	.63	...	...	.68	.79	.79	.78	.70	...
23-23.9	.86	.86	.75	.85	.89	.92	.86	$.71	.86	.78	.82	.71	.81	.67	...	...	.71	.84	.84	.82	.74	...
24-24.9	.90	.90	.80	.90	.93	.97	.90	.77	.89	.82	.86	.75	.85	.72	...	...	.75	.89	.89	.86	.78	...
25-25.9	.95	.95	.86	.94	.98	1.02	.95	.82	.93	.86	.90	.80	.89	.77	...	...	.79	.94	.94	.90	.82	...
26-26.9	.99	.99	.91	.99	1.00	1.08	.99	.88	.96	.90	.94	.84	.94	.82	...	...	.83	.99	.99	.95	...	...
27-27.9	1.03	1.03	.97	1.03	1.04	...	1.03	.94	1.00	.94	.98	.89	.98	.87	$.83	$.92	.87	1.04	1.04	.99	...	...
28-28.9	1.07	1.07	1.02	1.07	1.07	f.o.b.	1.07	.99	1.03	.98	...	.93	1.02	.91	.86	.96	.91	1.09	1.09	1.03	...	...
29-29.9	1.10	1.10	1.07	1.11	1.10	our	1.10	1.04	1.06	1.02	...	.98	1.06	.96	.90	.99	.95	1.14	1.14	1.07	...	...
30-30.9	1.14	1.14	1.12	1.15	1.14	pipe	1.14	1.09	1.09	..	...	1.02	1.10	1.01	.94	1.02	.99	1.19	1.19	1.11	...	...
31-31.9					1.17	line	1.17	1.14	...	..	...	1.07	1.14	1.05	.98	1.06	1.02	1.24	1.24	..	...	...
32-32.9					1.20	...	1.20	1.19	...	..	...	1.11	1.18	1.09	1.02	1.09	1.06	1.29	1.29	..	...	...
33-33.9								1.24	...	..	...	1.15	1.22	1.14	1.06	1.13	1.10	1.34	1.34	..	...	$1.12
34-34.9								1.29	...	..	...	1.20	1.26	1.19	1.10	1.16	1.14	...	...	..	...	1.17
35-35.9								1.34	...	..	...	1.24	...	1.23	1.14	1.20	...	...	...	..	...	1.21
36-36.9								1.39	...	..	...	1.28	...	1.27	1.18	1.23	...	...	...	..	...	1.25
37-37.9								1.44	...	..	...	1.33	...	1.31	1.22	1.26	...	...	...	..	...	1.29
38-38.9								1.49	...	..	...	1.37	...	1.36	1.25	1.30	...	...	...	..	...	1.33
39-39.9								1.54	...	..	...	1.42	...	...	1.29	1.34	...	...	...	..	...	1.38
40-40.9								1.59	...	...	...	1.46	...	...	1.33	1.37	...	...	...	..	...	...
41-41.9								...	...	...	...	1.50	...	...	1.37	1.40	...	...	...	..	...	...
42-42.9								...	...	...	...	1.54	...	...	1.41	1.44	...	...	...	..	...	...
43-43.9								...	...	...	...	1.59	...	...	1.45	1.47	...	...	...	..	...	...
44-44.9								...	...	...	...	1.63	...	...	1.49	1.51	...	...	...	..	...	...
45-45.9								...	...	...	...	1.67	...	...	1.53	1.54	...	...	...	..	...	...
46-46.9								...	...	...	...	1.71	...	...	1.57	1.57	...	...	...	..	...	...
47-47.9								...	...	...	...	...	...	...	1.61	...	...	...	...	..	...	...
48-48.9								...	...	...	...	...	...	...	1.64	...	...	...	...	..	...	...

For Newhall, McKittrick, Kern River, Round Mountain and Kern Front crude, Standard posts 60 cents per barrel for all grades. For Elwood Terrace crude (free on board ship), 33-33.9, $1.21, with 4 cents added for each degree up to and including 37° and over at $1.37; Wheeler Ridge crude, 19 to 21.9°, 60 cents; 22-22.9, 63 cents, 23-23.9, 67 cents; 24-24.9, 71 cents; 25° and over, 75 cents. On May 18, Union Oil Co. adopted Standard of California prices in all fields in which they both purchase.

MARKET RECORD OF ACTIVE OIL STOCKS . . .

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1940 High	1940 Low	Week ended Dec. 28 High	Week ended Dec. 28 Low	Week ended Dec. 28 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1939	Com. sh. earn. 1939	Com. sh. earn. 1938	1939 High	1939 Low	1938 High	1938 Low
58½	38½	46½	44⅜	46½	Amerada Corp.	788,675	N.P.	50cQ	10-31-40	$2.00	$1.56	$2.07	74½	50	78	55
27⅛	18¼	24⅞	24¼	24¼	Atlantic Refining	2,663,999	$25	25cQ	12-16-40	1.00	1.66	1.40	24¾	18⅛	27⅜	17¾
16⅝	8½	9¾	9⅜	9½	Barber Asphalt Co.	390,223	$10	25c	5-21-40	.25	1.39	—.85	21	10¼	23¾	12⅛
13⅜	7⅛	8⅜	8	8	Barnsdall Oil Co.	2,558,779	$5	15c	12-9-40	.90	.76	1.26	19½	11⅛	21⅜	10⅛
8⅛	5½	5⅞	5½	5⅝	Consolidated Oil Corp.	13,751,726	N.P.	12½cQ	2-15-41	.80	.55	.55	9⅞	6½	10¾	7
25	16⅛	19	18⅛	18⅝	Continental Oil of Delaware	4,682,572	$5	25cQ	12-23-40	1.00	1.35	1.10	31½	19⅞	35¾	21¼
6⅞	3⅜	3⅞	3¾	3⅞	Houston Oil	1,098,618	$25	....	10-17-30	....	.43	.83	9⅜	4½	9¾	5
14⅜	9	11⅜	10¼	10¼	Lion Oil Refining	435,815	N.P.	25cQ	10-10-40	1.00	1.50	2.09	18⅛	10	25½	15⅝
17⅜	11½	14½	13⅞	14¼	Mid-Continent Petroleum	1,857,912	$10	40c	12-2-40	.60	1.42	.56	18	11⅛	22⅝	12¼
11¾	7⅛	10⅝	10⅛	10½	Mission Corporation	1,378,645	$10	25c	12-20-40	.65	.87	1.04	14⅞	8¾	17¾	10⅝
9¾	4⅝	6	5⅝	5⅝	National Supply	1,155,517	$10	....	12-22-37	....	—.87	—.79	15½	5⅝	23	12½
8¾	5⅜	7⅛	6¾	7⅛	Ohio Oil Co.	6,563,377	N.P.	25c	12-14-40	....	—.10	.25	10½	6	14⅞	8⅞
8¼	5½	6⅜	6¼	6⅜	Pacific Western Oil	1,000,000	N.P.	40c	12-19-39	.40	.81	1.22	11⅞	7	15⅞	10¼
10½	6¾	7¾	7½	7½	Pan American Pet. Trans.	4,702,945	$5	25c	12-21-40	....	1.10	.08	8¾	5	9¼	6¼
41⅜	27⅛	41¼	39⅝	41¼	Phillips Petroleum	4,449,052	N.P.	50cQ	11-30-40	2.00	2.21	2.03	46½	31⅛	44⅜	27¼
22¾	15	16⅞	16¼	16¼	Plymouth Oil Co.	1,038,633	$5	25c‡	12-23-40	$1.40	2.38	2.59	24	17⅛	25⅜	15
11½	6¾	8¼	7¾	8¼	Pure Oil Co.	3,982,031	N.P.	25c	12-20-40	.25	1.11	.38	11⅜	6⅜	13½	8¼
9¼	5⅞	8⅝	8⅜	8⅝	Richfield Oil Corp.	4,010,000	N.P.	50c	12-21-40	.50	.65	.51	10¼	6⅝	9⅞	5
20	11	13	12¼	12⅝	Seaboard Oil of Delaware	1,244,383	N.P.	25cQ	12-14-40	1.00	1.40	1.52	24⅜	15½	27½	15½
13⅛	7⅝	11	10⅝	11	Shell Union Oil	13,070,625	N.P.	50c	12-20-40	.50	.77	.72	17¼	9⅞	18⅜	10
23¼	12¼	20⅝	20	20⅜	Skelly Oil	995,349	$15	50c	12-20-40	.75	1.99	2.27	29½	15½	34¾	18½
12½	7⅛	8¼	8	8	Socony-Vacuum	31,206,071	$15	25cSA	9-16-40	.50	1.10	1.29	15⅛	10¼	16⅜	10¾
26⅛	16¼	18¼	17¾	18	Standard Oil of California	13,003,953	N.P.	25cQ	12-16-40	1.10	1.38	2.22	33⅝	24¼	34⅞	25⅛
29	20¾	25⅞	25¼	25⅝	Standard Oil (Indiana)	15,272,020	$25	50c†	12-16-40	1.25	2.23	1.82	30	22⅜	35½	24¾
46½	29⅞	33⅝	33⅛	33¼	Standard Oil of New Jersey	27,280,998	$25	75c†	12-16-40	1.25	3.26	2.86	53½	38	58⅜	39¾
65⅞	46¾	59½	57⅜	58	Sun Oil	2,434,863	N.P.	25cQ	12-16-40	1.00	2.74	1.07	66	45¾	65½	45
2½	1⅛	1½	1⅜	1½	Superior Oil Corp.	1,388,979	$1	10c	12-28-40	....	.04	.24	3⅝	1¾	4¼	1¾
47⅝	33	40¼	38¾	40⅛	Texas Corp.	10,876,139	$25	50cQ	1-2-41	2.00	3.02	2.13	50¾	32½	49⅝	32⅝
4¼	2½	3⅜	3	3	Texas Gulf Producing Co.	888,147	N.P.	10c	12-14-40	.20	.69	.86	5¾	3¼	5⅞	2⅝
8⅝	5⅜	5⅞	5½	5⅝	Texas Pacific Coal & Oil	888,236	$10	10c	12-2-40	.40	1.00	1.16	11⅜	7	12½	7
12	8¾	9¾	9½	9½	Tide Water Associated	6,371,827	$10	15c	12-2-40	.80	1.05	1.28	14¼	9½	15¾	10½
17½	12	12⅜	12⅛	12¼	Union Oil Co. of California	4,666,270	$25	25c	11-10-40	1.05	1.25	1.47	19¾	15⅛	22½	17⅛
29⅞	22¾	28⅛	28	28⅛	Union Tank Car Co.	1,177,381	N.P.	45c	12-2-40	1.30	2.07	1.16	24¼	20⅛	23½	20
3⅝	1¾	1¾	1¾	1¾	Wilcox Oil & Gas	470,768	$5	10c	2-15-40	....	.77	.52	4¼	2⅜	3½	1⅝

*Also 5 per cent in stock. †Includes extras. ‡Also 2 per cent in stock. §Also 4 per cent in stock. ‖Also 2½ per cent in stock. ¶Also 1⅛ per cent in stock. —Deficit

New York Curb Exchange

1940 High	1940 Low	Week ended Dec. 28 High	Week ended Dec. 28 Low	Week ended Dec. 28 Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1939	Com. sh. earn. 1939	Com. sh. earn. 1938	1939 High	1939 Low	1938 High	1938 Low
10¾	4½	7⅛	6⅝	7⅛	American Republics Corp.	1,308,049	$10	25c	12-18-40	....	$0.14	—.22	11¾	5½	11¾	5
3¼	1⅜	1⅝	1⅜	1⅝	Bridgeport Machine Co.	263,700	N.P.	$1.25	12-30-37	....	—.95	—.14	7¼	2½	10¼	4⅞
43	28	38½	38½	38½	Buckeye Pipe Line Co.	200,000	$50	$1	12-14-40	$2.50	3.13	2.36	34¾	26½	39	22½
117	105	107½	107½	107½	Chesebrough Mfg. Co.	120,000	$25	$1.50Q†	12-16-40	6.00	7.87	5.32	130	108⅝	128	97
6¾	4	5⅛	4⅝	4¾	Cities Service (new)	3,703,978	$10	....	6-1-32	....	.68	.23	9¼	4¼	11	5⅛
2⅛	⅝	¾	⅝	¾	Cosden Petroleum	465,332	$1	....	.....	....	....	....	2¼	½	2⅝	⅞
24¼	11⅝	13¼	12⅜	12⅝	Creole Petroleum	6,974,356	$5	50cSA†	12-16-40	1.00	1.38	1.64	28	16¾	27½	17½
4⅜	2⅞	3⅞	3¾	3⅞	Darby Petroleum	351,390	$5	25cSA	1-15-39	.25	.03	.69	7⅛	3⅝	10¼	5½
2	¾	1	¾	1	Derby Oil & Refining	263,162	N.P.	....	.....	....	—.37	—.91	2⅝	1½	3½	1½
31	20¼	20¼	20¼	20¼	Eureka Pipe Line	50,000	$50	50c	11-1-40	2.00	.63	—.37	23	15⅛	31	16
39⅞	25⅛	32¾	31¾	32¾	Gulf Oil Corp.	9,076,202	$25	25cQ	12-27-40	2.00	1.69	1.43	45⅛	29¼	46⅞	33
68	47⅛	63¾	61¼	62	Humble Oil & Refining	8,987,840	N.P.	62½c	12-26-40	2.00	3.33	3.98	71	52½	72⅝	56
12⅜	5½	5⅝	5⅜	5⅝	Imperial Oil of Canada	26,965,078	N.P.	25c	12-2-40	1.00	.71	.96	17	11⅜	19½	14⅛
7¾	3	3¼	3⅛	3¼	Indiana Pipe Line	300,000	$7.50	20c	11-15-40	.50	.33	.47	7¼	5½	9⅜	6
19¾	8¼	9⅜	8⅝	9⅜	International Petroleum	14,324,088	N.P.	50c	12-2-40	1.75	1.19	1.98	27½	17	31¼	21
2¾	1⅝	1⅝	1⅝	1⅝	Kirby Petroleum Co.	500,000	$1	10c	4-15-38	....	.06	.14	3¾	2⅛	5	2⅛
10¾	7⅝	9¼	9	9¼	Lone Star Gas	5,518,347	N.P.	30c	12-21-40	.70	.98	.88	10½	7⅛	10⅜	6⅝
6¼	3¾	4¼	4⅛	4⅛	Louisiana Land & Exp.	2,966,762	$1	5c	12-16-40	.35	.22	.45	7¾	4	9⅜	6½
17	9¼	..	..	..	Margay Oil Corp.	149,943	N.P.	25cQ	1-10-41	1.00	1.52	2.28	17	14½	24	16
8½	6½	7½	7¼	7⅜	Midwest Oil Co.	998,474	$10	45c	12-16-40	.90	.99	.93	8¾	6⅝	9¾	6⅝
6¼	4⅞	5⅛	5	5	Mountain Producers	1,593,584	$10	30cSA	12-16-40	.60	.70	.62	6	4⅞	5¾	4½
13⅛	10	11⅝	11	11⅝	National Fuel Gas	3,810,183	N.P.	25cQ	1-15-31	1.00	.95	.84	14	11¼	14⅝	11½
12½	8¾	10¼	10	10	National Transit	509,000	$12.50	50c	12-16-40	.95	.91	.88	9½	7¼	9¼	6½
1¼	¾	1	1	1	New Mexico and Arizona	1,000,000	$1	1c	12-1-37	....	.02	.02	1⅜	1	2⅝	1⅛
7¾	5¼	..	..	..	New York Transit	100,000	$5	25c	9-20-40	.40	.88	.16	6	4	4½	3½
9⅞	6	8½	8½	8½	Northern Pipe Line	120,000	$10	40c	12-2-40	.30	.31	.24	7	4½	6	4
5½	2½	3¼	2⅞	3	Pantepec Oil	2,856,872	$1	....	.....	....	....	....	7⅝	4	7¾	3½
3¼	1¼	1¼	1⅛	1⅛	Root Petroleum Co.	336,045	$1	25c	2-1-37	....	.70	.17	5	1¼	4½	1⅝
3	1½	2½	2½	2½	Ryan Consolidated	298,931	N.P.	10c	12-28-40	....	.16	.29	3	1⅞	4	2⅛
11¾	4¾	7½	7⅜	7⅜	Southern Pipe Line	100,000	$10	25c	9-3-40	.30	.25	—.27	4⅞	3½	5⅜	3¼
44	28	39¼	37¾	37¾	South Penn Oil	1,000,000	$25	$1.87½†	12-20-40	3.00	2.84	1.44	40½	26¾	39	28¾
35	21	22⅝	22	22	Southwest Penna. Pipe Lines	35,000	$50	50c	12-26-40	2.00	2.06	—.41	23	18	22¼	16½
20⅞	16½	19⅛	18¾	19	Standard Oil of Kentucky	2,604,790	$10	55c†	12-16-40	1.30	1.53	1.45	20⅛	17¼	18¾	15
41¾	26¼	38	35⅛	38	Standard Oil of Ohio	753,740	$25	$1.25†	12-14-40	1.50	6.64	1.81	32¾	17	22¾	16¼
2	1⅜	1⅝	1½	1⅝	Sunray Oil	1,975,876	$1	5c	12-20-40	.10	.25	.23	2¾	1⅜	3¼	2
3⅛	2	2⅞	2¾	2⅞	Texon Oil & Land	936,024	$2	10c	12-30-40	.10	.49	.56	4	2⅝	5¼	3½
3⅜	2	2¼	2⅛	2¼	Transwestern Oil Co.	750,000	$10	....	.....	....	—1.42	.12	6	2½	5¼	2⅝
2⅛	¾	⅛	¾	¾	United Gas Corp.	7,818,959	$1	....	.....	....	—.55	—.51	3⅜	1½	5¼	2⅝

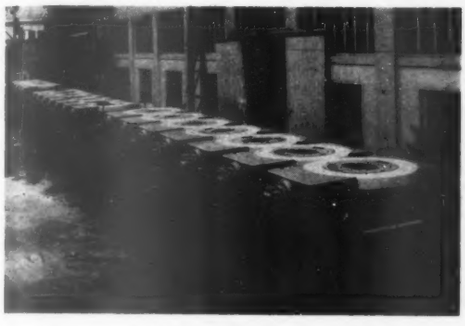
†Includes extras. —Deficit.

EQUIPMENT PROGRESS...

IDECO Shipping Many New Streamlined Rotaries

That IDECO'S new streamlined rotaries are taking world fields by storm is well illustrated in the picture below showing 20 of the 23-in. standard models on flat cars ready for delivery. These are a part of an order for 40 units. IDECO streamlined rotaries were only recently developed to include sizes for every type of drilling. They are now made in three different sizes, 17¼, 23 and 27½-in.; in two different styles, the "hi-speed" and the standard. The "hi-speed" machine has a spiral-bevel ring gear and pinion and is designed to give maximum operating speed with minimum noise. The standard table has a straight-bevel ring gear and pinion.

In manufacturing this machine, IDECO has taken the stand that the design of any piece of machinery is too often dependent upon custom—previous design. First, they discarded all outmoded and obsolete con-



struction. Then they assembled together the various elements that would achieve most effectively the functions of a rotary table. The result has proven worthy of the effort. For here is a machine that is new, radically different, but obviously more suited to the job, smooth and rugged in appearance, strong, yet light in weight—with a fundamental reason underlying every detail.

Its box-type, ultra-streamlined design makes bearings and other important working parts immune to foreign matter, and at the same time affords rugged strength. The word oilbath, so often misused in oil-field terminology, is well used to describe its lubrication process. IDECO's policy of simplifying and centralizing component motivating parts adds strength while deducting weight, reduces wearable surfaces to a minimum.

"Oilwell" SC-12 and SC-17 Single-Crank Units

Two new single-crank pumping units for medium-duty service have been added to the extensive line manufactured by Oil Well Supply Co. Designated as the "Oilwell" SC-12 and SC-17 Pumping Units, both are identical except for the capacities and ratios of their reduction gears. The A.P.I. polished-rod load capacity is 10,000 lb. and available stroke lengths are 22, 32, and 42 in. The D-12 double-reduction gear of the SC-12 unit has a 31.9:1 ratio and an A.P.I. peak torque capacity of 58,000 in.-lb. at 20 s.p.m. The D-17 reduction gear of the SC-17 unit has a 32.15:1 ratio and an A.P.I. peak torque capacity of 82,000 in.-lb. at 20 s.p.m.

Both reduction gears comprise heavily ribbed, rigid, cast semisteel cases with single-helical, fully heat-treated, forged-steel gears and pinions. The shafts are also fully heat-treated and are mounted in heavy-duty, shim-adjustable, tapered roller bearings. Pinions are integral with their shafts. The high-speed and crank shafts are equally extended, and both reduction gears are designed for full-capacity output from either crank-shaft extension, thus being especially suitable for back-crank pumping. A quick-acting brake with convenient remote control operates on a drum at one end of the high-speed shaft. The gear ratios are readily adapted to drives from inexpensive, high-speed prime movers as well as engines of the medium-speed range.

Frames, either short or extended, are of arc-welded structural steel with four-leg, derrick-type samson posts. Both arc-type and rubber-cushioned, oil-bath, link-type hangers are available. Beam counterbalancing by means of convenient plates is standard, but crank weights can also be furnished where rotary counterbalancing is desired. Even when equipped with counterbalances, the crank clears the floor. All bearings are enclosed in weatherproof and oil-tight housings. The saddle bearings are oil-bath and the crankpin bearing and upper-pitman bearings are grease lubricated.

Changing stroke lengths of either unit is made easy by the self-aligning, spherical roller bearings on the crank-pin combined with a universal-bearing arrangement at the top of the pitman. It is only necessary to remove the crank-pin nut and withdraw the pin. No further dismantling is required.

TRADE LITERATURE

NORTON CO., Worcester, Mass.—28-page booklet describing the company's abrasive cutoff wheels. Topics covered include time savings and lower costs possible by use of abrasive cutoff wheels, limitations of use, types of abrasives, types of bonds, types of cutoff machines, and general recommendations for selecting wheels according to material to be cut.

BROWN INSTRUMENT CO., Wayne and Roberts avenues, Philadelphia, Pa.—Catalog 2007, covering the complete line of Brown electric flow meters for the measurement and control of steam, air, oil, water, chemicals, and other fluids. Schematic diagrams of various meter bodies and piping layouts are shown and outstanding features and operating principles are fully described.

WORTHINGTON PUMP & MACHINERY CORP., Harrison, N. J.—Bulletin H-850-B52B, an eight-page booklet describing its gasoline-engine-driven, portable compressors. Types of mountings are described and specifications of various units are given, as well as various features pointed out.

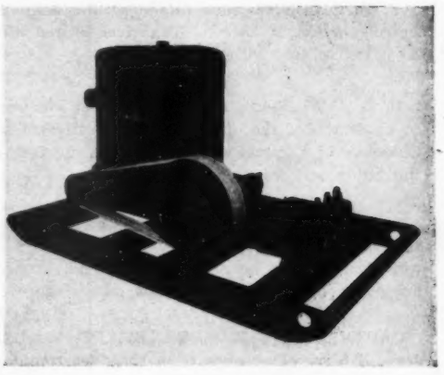
JOHN A. ROEBLING'S SONS CO., Philadelphia, Pa. 34-page booklet, "Rubber Covered Wires and Cables—Service Entrance Cables," describing these products. Specifications and description of strandings, insulations, coverings, standard rubber insulation building wires, service entrance cables, and information of "Thin-Wall" building wires and cables are given. Useful information for the electrical man, and examples of its use, is also given.

ALLIS-CHALMERS MANUFACTURING CO., Milwaukee, Wis.—Bulletin B-6140 on the company's new all-in-one "Electrifugal" pumps for 1 to 10 hp., inclusive, for heads up to 160 ft. It profusely illustrates and describes the unit construction, incorporating either special splashproof motors, totally enclosed fan-cooled motors, or explosionproof fan-cooled motors as may be required.

AMERICAN SCHAEFFER & BUDENBERG INSTRUMENT DIVISION OF MANNING, MAXWELL & MOORE, INC., Bridgeport, Conn. — New controller catalog covering 84 pages of vital control information. This detailed book covers the complete line of American self-operated controllers, combined temperature controllers with indicators, pressure controllers, wide-range indicating controllers, wide-range nonindicating controllers, and controlographs. In addition it covers a complete line of diaphragm motor valves, and gives diaphragm motor-valve capacity charts.

Harley Announces Horizontal Triplex Pumping Unit

Harley Sales Co., Tulsa, and Houston, Tex., has announced a horizontal triplex pump for high-pressure service, available in two sizes both powered by four-



cylinder Wisconsin air-cooled engines. They are especially adapted to oil-field service and stand up to the toughest kind of treatment. The heavily counterbalanced crankshaft mounted on Timken bearings insures a smooth-running engine at all speeds. The cylinder block is cast separately from the crankcase for economical servicing. The cylinder heads have renewable valve-seat inserts. The ignition is effected by a high-tension rotary magneto with impulse starter and is a type familiarly used by nearly all oil-field operators. The pump, made in two sizes, 2 by 2¾ in. and 2½ by 3½ in., is of horizontal, triplex, reciprocating type and is stainless-steel-fitted.

The unit is fabricated on an attractive and substantial steel subbase and is suitable for pumping crude oil through high-pressure pipe lines or for high-pressure injection work where fresh water or oil-field brine is used. A limited stock of units is maintained at the Tulsa warehouse.

Both Harley Neal and Ray O. Neal of the Harley company have been in the oil industry more than 20 years.

Fred Lowell Made Manager Of National Engine Sales

The National Supply Co. recently announced the appointment of Fred R. Lowell as its manager of engine sales. Mr. Lowell has been affiliated with the National Supply organization since April 1936, when he assumed charge of the company's commercial engine sales in the Southwest with headquarters at Houston, Tex. In January 1940, he was transferred to Springfield, Ohio, to become manager of oil-field engine sales and occupied this position at the time of his present appointment.

Following his graduation from the University of Wisconsin in engineering in 1926, Mr. Lowell was associated with the engineering department of Fairbanks-Morse & Co. In 1928 he joined the engine sales stall at the Chicago office and in June 1933 became Fairbanks representative to the Philippine Islands in charge of sales and service of all the company's products. In June 1933, he was made manager of export-division machinery department of Fairbanks-Morse with headquarters in New York. Mr. Lowell resigned this position in April 1936 to join the National's sales staff.

Personal Paragraphs

T. B. GILBERT, superintendent for Magnolia Petroleum Co. at Electra, Tex., has retired after 35 years' service with the company.

O. C. CASH, Stanolind Oil Co., Tulsa, was elected chairman of the open-forum committee of the Chamber of Commerce for 1941 at a meeting of the group last week.

W. C. WENZEL, manager of the petroleum division, Dun & Bradstreet, Inc., New York City, is convalescing at a hospital in Richmond, Va., following an operation there a few weeks ago.

CAPT. ALBERT E. SWEENEY, JR., has been granted leave of absence from the department of petroleum engineering, University of Texas, and is serving with the 142nd Infantry, Thirty-sixth Division, as regimental intelligence officer.

W. S. S. RODGERS, president of Texas Corp., New York, is spending the holiday season in Houston, Tex.

JOHN W. BORRAR, engineer with Gulf Oil Corp., Seminole, Okla., has been granted a year's leave of absence for Army duty. He has gone to Fort Belvoir, Va.

DANA HOGAN, president of Hogan Petroleum Co., was recently reelected president of the San Joaquin Valley Oil Producers Association which he aided in organizing several years ago.

NORVAL F. MYERS, for several years manager of refineries of Union Oil Co., and who recently resigned, has joined the Socony-Vacuum family and will leave Los Angeles for New York within the next few days.

The Conservation Committee of California Oil Producers, official curtailment group, recently presented J. R. (BILL) PEMBERTON, who served for 8 years as California oil umpire, with an illuminated parchment expressing its appreciation of his services.

ALLEN JAMES, of the Warren Petroleum Corp. sales department, returned to his Tulsa offices last week after spending 2 weeks in the operating department of the Coronado Corp. gasoline plant located near Corpus Christi, Tex. Allen has been learning how natural gasoline is made so he may sell more of it and with Warren handling the output of the plant, he feels that he is in the "know."

FRED E. BERGFORS, Quincy Oil Co., Quincy, Mass., is the new president of the National Oil Marketers Association. ROYAL E. DECKER, Plymouth Oil Co., Detroit, Mich., is vice president.

BRUCE BARKIS, petroleum engineer, Barkis & Wright, Houston, Tex., spoke before the student section of the A.I.M.E. at the University of Texas recently. His subject was "Improving the Primary Cement Job."

HARRY A. WALLACE, JR., Charleston, W. Va., who was formerly assistant general manager of the Charleston group of Columbia Gas & Electric Corp. companies, has been elected vice president of those companies operating in southern Ohio, West Virginia and Kentucky. Mr. Wallace is the son of HARRY A. WALLACE, SR., president of the United Fuel Gas Co., Charleston, W. Va.

GUY FOWLE, of Gas Service Co., Pittsburg, Kans., was recently elected vice president of the Pittsburg Kiwanis Club for 1941.

CHARLES HENRY BEHRE, JR., Northwestern University, addressed the Oklahoma City Geological Society, December 30, on "The Geology of the South Park Region of Colorado."

CHARLIE ALFORD, chief gager for Humble Pipe Line Co., with headquarters at Pampa, Tex., has been elected chairman of the Panhandle chapter of the American Petroleum Institute for 1941. He will shortly announce committees to handle the spring convention of the Mid-Continent chapter in Amarillo, Tex., in March.

RAYMOND L. ABEL, professor of chemical engineering at the University of Pittsburgh, and a lieutenant colonel in the Chemical Warfare Service Reserve, has been called to extended active duty by the War Department. Colonel Abel, who is widely known in the oil industry, is assigned as chief of the Inspection Division, Pittsburgh Chemical Warfare Procurement District.

W. M. ERDAHL, computer for a Carter Oil Co. seismograph crew, recently returned from a 20-month assignment in New Zealand and is now located in Northwest Kansas. The crew, with R. C. CLARK in charge, performed the work in New Zealand on a contract basis. A test is now being drilled by the New Zealand company as a result. Mr. Clark returned to his Tulsa office on completion of the New Zealand assignment.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

With discoveries at near both Augusta and El Dorado, Kans., these towns are enjoying boom conditions. Leases a mile from production are getting $100 an acre and $10 rentals.

After 2 years of development without a dry hole within the proven area, operators at Irvine, Ky., are getting a pipe line.

After penetrating a gas sand at Healdton a distance of 1 ft., the tools were blown over 300 ft. in the air from a Gypsy Oil & Gas Co. well.

A London oil paper expresses astonishment that the British Government and the Anglo-Persian Oil Co. should have squandered large sums of money looking for oil in Persia.

20 YEARS AGO

A London paper comments on the fact that the U. S. Government has put our oil magnates in a quandary by demanding a share of the Mesopotamia oil.

The Seep Purchasing Agency posted a reduction of 25 cents in the price of Corning crude, making the present price $4 a barrel.

10 YEARS AGO

Bateman 1 Crim came in with an estimated production of from 15,000 to 20,000 bbl. It is 10 miles to the north of the Joiner well. The extent of the pool now seems unlimited.

The world's oil production for 1931 is estimated at 1,360,000,000 bbl., of which 850,000,000 bbl. comes from the United States.

R. S. WARNOCK, of Magnolia, Ark., has been named to the Arkansas Oil and Gas Commission, succeeding L. A. LONGINO of that city, who resigned from the commission.

R. OGARRIO, vice president in charge of production for the Texas Corp., at New York City, stopped off at Houston, Tex., on his return to New York from a holiday visit to Mexico City.

JOSEPH McDONALD, independent operator with production in several San Joaquin Valley fields, has returned to Bakersfield, Calif., following a pleasure trip to Honolulu, Japan and the Orient. He was accompanied by his sister and the latter's son, Joseph.

PERRY WILE, 61, well-known Clarion, Pa., drilling contractor and president of the Clarion First National Bank, is in the Brookville, Pa., hospital receiving treatment for injuries received when struck by an automobile December 20. His left leg was fractured.

J. S. HAWLEY, assistant purchaser of the Stanolind companies, Tulsa, has been elected president of the Purchasing Agents Association of Tulsa, succeeding H. E. KAISER of Phillips Petroleum Co., Bartlesville. Okla. C. G. McCLAREN of Shell Oil Co., Inc., was elected first vice president, J. H. WOLFE of British American Oil Producing Co., second vice president, and R. R. BURRIS of Sun Oil Co. was elected secretary.

F. B. JORDAN, Carter Oil Co. land man, has been transferred from Jackson, Miss., to Mattoon, Ill.

WARREN WYNN, geologist for Sinclair Prairie Oil Co., formerly located in the Tulsa office, has been transferred to Bismarck, N. D.

H. J. MOSSER, independent oil operator, was recently elected first vice president of the Alice (Tex.) Chamber of Commerce.

JOHN ROMER, vice president of Socony-Vacuum Oil Co., Inc., New Rochelle, N. Y., was in Corpus Christi, Tex., last week, on a duck-hunting trip.

IRA H. STEIN, Corpus Christi, Tex., district geologist for Continental Oil Co., spent the holidays with his wife and two children in Wichita, Kans.

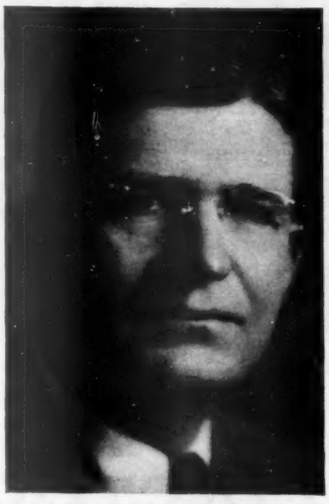
RAYMOND BAKER, head of the geological department for the Texas Corp., with headquarters at New York, spent the holiday season in Houston, Tex.

F. P. DILGER, independent operator of Osage, Wyo., returned to the list of active operators last week after having been kept inactive for some time by illness.

DR. C. P. BERKEY, of Columbia University, was elected president of the Geological Society of America at the meeting of the society in Austin, Tex., last week. L. W. STEPHENSON, U.S.G.S., was elected president of the Paleontological Society of America, and DR. FRED E. WRIGHT, of Carnegie Institute's geophysical laboratory, Washington, D. C., was named president of the Mineralogical Society of America.

Heads Two Departments

Hines H. Baker, director of the Humble Oil & Refining Co., Houston, Tex., has been named by the board of directors as head of the refining and sales departments of the company. He succeeds Stuart A. Giraud, who died on December 22. In his new work, Mr. Baker will direct the company's refining activities, including the large Baytown unit, that at Ingleside and several small plants over the state. He will also assume responsibility for the sales department, which maintains marketing facilities throughout a large portion of Texas.



HINES H. BAKER

Mr. Baker's association with Humble began in October 1919 when he went to work with the legal department. He served in a legal capacity until early in 1937, when he was elected to the board.

A native of Texas, Mr. Baker was born in Mills County in 1893. He attended the University of Texas, taking both his B.A. and law degrees from that institution. He was elected to Phi Beta Kappa.

Mr. Baker, whose graduation from university coincided with the entrance of the United States into the World War, served as a lieutenant of artillery, and after his discharge from the Army, opened a law office in Beaumont, Tex. A year later he began his service with the Humble company, under E. E. Townes, then as now, general counsel for the company.

L. A. MYLIUS, consulting geologist of Centralia, Ill., has opened a branch office in Evansville, Ind., though he will continue to reside in Centralia.

S. J. OSBORN, Ada, Okla., partner in the firm of Delaney & Osborn Drilling Co., is recovering at his home from injuries received in an automobile accident last week.

LLOYD DANIELS, drilling superintendent for W. G. Ray Drilling Co., has been transferred from Jackson, Miss., to Minden, La., base of operations for several tests being drilled by Mr. Ray.

A. F. BARRETT, geologist for General Petroleum Corp. in the Rocky Mountain division, Casper, Wyo., was in Los Angeles, Calif., the past week on business and to attend the Rose Bowl game at Pasadena.

A. W. AMBROSE, vice president of Cities Service Oil Co., Bartlesville, Okla., has been elected president of the Bartlesville Chamber of Commerce. K. E. ADAMS, president of Phillips Petroleum Co., was elected second vice president.

JACK DEMPSEY, former world's heavyweight boxing champion, has joined the ranks of the oil industry. He has authorized purchase of some leases in wildcat territory in Gaines County, Texas, and plans to open offices at Seagraves next month.

C. E. SUTTON, manager of Pure Oil Co.'s Gulf Coast division, Houston, Tex., is also managing the Fort Worth division in the absence of R. W. McILVAIN, JR. Mr. McIlvain, a reserve officer in the cavalry, is now on active duty, being stationed at El Paso, Tex.

T. T. TAYLOR, general superintendent for Regal Dutch Petroleum Co., Holland, Mich., will soon celebrate his fiftieth year of active service in the oil industry. Mr. Taylor, now 65, started his oil career in 1890, in the vicinity of Lima, Ohio.

EBEN GRIFFITHS, of Socony-Vacuum Oil Co., with offices in New York, and GEORGE N. WALKER, assistant advertising manager of the same company, are holding a series of meetings with A. H. DeFRIEST, vice president of General Petroleum Corp. and other members of the company in Los Angeles, Calif.

Shifts: M. A. ABERNATHY, vice president, United Gas Pipe Line Co., from Houston, Tex., to Shreveport, La.; H. W. EISER, purchasing agent, United Gas Pipe Line Co., from Houston, Tex., to Shreveport, La.; E. A. PARKFORD, president, California Consolidated Oil Corp., from Los Angeles, Calif., to Beverly Hills, Calif.; H. D. MURRAY, engineer, Texas Co., from Jal, N. M., to Sundown, Tex.; T. W. HAUGHT, superintendent, Ohio Oil Co., from Eliasville, Tex., to Bay City, Tex.; B. O. JONES, Lilly & Jones, from St. Louis, Mo., to Centralia, Ill.; O. M. HUDSON, geologist, Midstates Oil Corp., from Jackson, Miss., to Tulsa; J. F. DARBY, president, Darby Lynde Co., from Muskogee, Okla., to Chandler, Ariz.; CHARLES F. REDMON, JR., engineer, Phillips Petroleum Co., from Oklahoma City, Okla., to Bartlesville, Okla., W. K. HALEY, superintendent, Barnsdall Oil Co., from Mankins, Tex., to Odessa, Tex.; H. J. SUMMY, superintendent, Sinclair Prairie Oil Co., from Midland, Tex., to Arp, Tex.; JOSEPH A. HEALY, land and lease department, Belcher Producing Co., from Santa Monica, Calif., to Miami, Fla.; WILLIAM E. KENNETT, geologist, Superior Oil Co., from Van Nuys, Calif., to San Fernando, Calif.; JOHN O'BRIEN, engineer, Texas Co., from Coalinga, Calif., to Fellows, Calif.; WILLIS M. DECKER, engineer, Cities Service Oil Co., from Hallettsville, Tex., to Kenedy, Tex.; IVAN J. FENN, geologist, Subterrex Co., from Houston, Tex., to McLeansboro, Ill.; C. J. JACKSON, geologist, Stanolind Oil & Gas Co., from Winnfield, La., to Leesville, La.; PAUL BUTHOD, engineer, Pure Oil Co., from Niles Center, Ill., to Skokie, Ill.; EDDIE A. REID, superintendent, Arrow Drilling Co., from Mount Vernon, Ill., to Carmi, Ill.; W. H. STRICKLER, engineer, Sohio Corp., from Allegan, Mich., to Grand Rapids, Mich.; ROBERT D. HANNA, vice president, Mex-Seaboard Oil Co., from New York City, to Miami, Fla.; WILLIAM H. METZ, H. M. Naylor Oil Co., from Des Moines, Iowa, to St. Petersburg, Fla.; JOHN C. ROBESON, engineer, Carter Oil Co., from Columbus, Kans., to Caripito, Venezuela, S. A.; JAMES M. JOHNSTON, engineer, Shell Oil Co., Inc., from Wichita, Kans., to Tulsa.

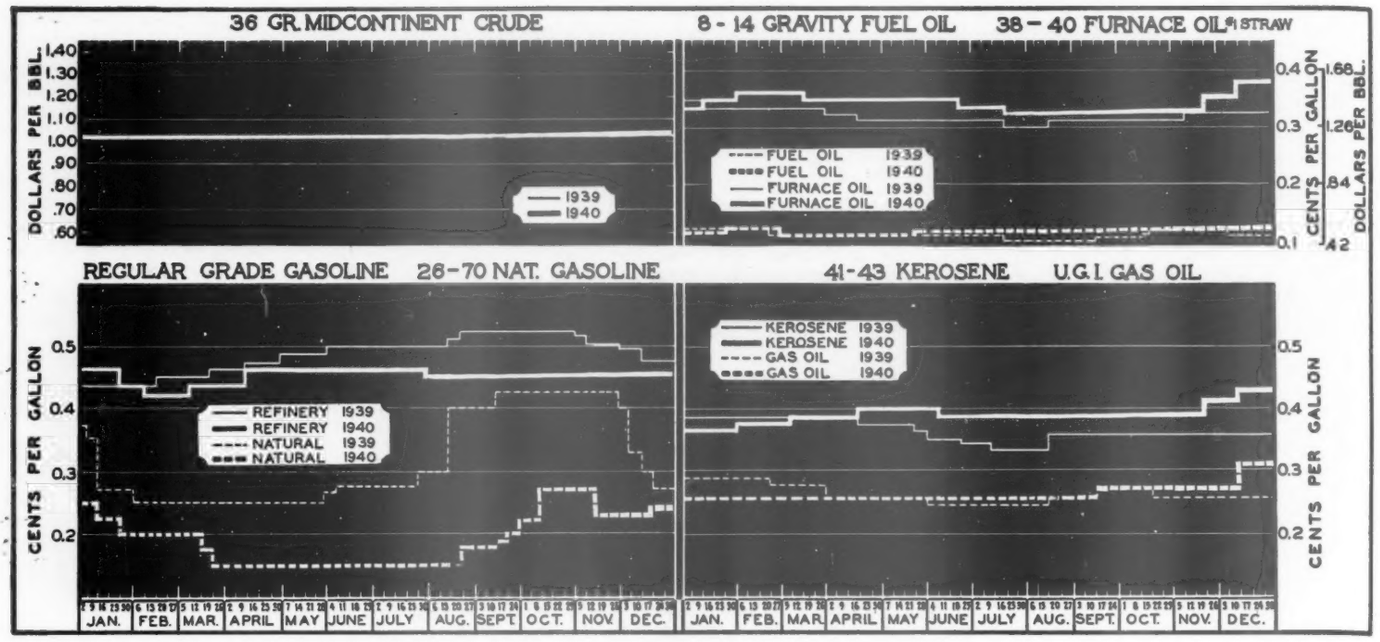
JOHN STEWART BLAKENEY, chemist, Warren Petroleum Corp. plant at Galva, Kans., is visiting Tulsa over New Year's.

GEORGE TALBOT, head of Talbot Oil Co., returned to his home in Saginaw, Mich., last week after undergoing an operation recently at Rochester, Minn.

DON DAVIS, formerly with Bovaird Supply Co. in Kansas, is in charge of a branch office opened in Wichita, Kans., by Helmerich & Payne, Inc., on January 1.

GUY S. CONNORS, vice president, Williams Brothers Corp., was in Tulsa on New Year's Day. He is returning to Livingston, Tex., where he has been spending recent weeks directing construction operations in the laying of Pan American Pipe Line Co.'s crude-oil line from East Texas to the Gulf Coast

R. A. BROOMFIELD, Jr., A. L. MARSTEN, DANA HOGAN, E. E. PYLES, WILLIAM KECK, Jr., THOMAS McMANUS and ALLAN A. JERGINS were elected members of the board of directors of the San Joaquin Valley Oil Producers Association at the annual meeting held in Bakersfield, Calif., last week.



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Residual Fuel-Oil Prices Advance In Group 3 as Demand Expands

By H. STANLEY NORMAN

RESIDUAL fuels stole the ball this week from lighter burning products and from gasoline in the Group 3 refinery market. Inquiries for residual fuels are sifting into the Mid-Continent refinery market at a rate not equaled since Illinois became an important source of supply.

Northern buyers are searching the Group 3 market for supplies of residual fuel that have been readily available in Illinois for the two previous winters. One factor, of course, is the increment in heavy-fuel consumption in the middle western section resulting from the defense program. Steel mills are consuming greater quantities of residual than at any time in their history. Residuals are being consumed in greater quantities by practically all types of heavy industrial plants contributing to the manufacture of defense materials and these developments are registering unprecedented impact on the market.

Residual Supplies Scarce

One supplier in the Group 3 territory was forced to scour the inland market for residuals to meet an inquiry for 150 cars placed by a regular customer. In the two past winters this customer had been served from Illinois but the material was not available there this year.

Another inquiry for 100 cars of residual fuel oil found at least one supplier in the Mid-Continent completely disqualified from submitting a bid. The material was simply unavailable.

The spot tank-car market for residual fuels in the Mid-Continent now ranges from 60 to 65 cents per barrel, an advance of 10 cents over the prices obtaining through the earlier part of the winter.

Inability of the inland refiners to supply the growing demand in the Middle West may accrue to the benefit of Gulf Coast plants or to the importing companies. Reduction of rail transportation costs from the Middle West to the Atlantic seaboard instituted in the middle of December will reduce barriers to interior movement.

The tank-car price on residual fuels in the Whiting-East Chicago refining center was reported to be 3.25 cents per gallon early this week. The higher Chicago price, which is at the rate of $1.365 per barrel, is the highest quoted in several years.

Movement of motor fuel from the Group 3 refining district followed routine lines this week. Consumption is down slightly if inquiries from the northern sections of the country can be considered a reliable yardstick. The surprising thing to suppliers is that shipping instructions have held so near earlier winter levels right through the year end. The contraction of shipping instructions is normally much more severe permitting distributors to work their inventories to a minimum for start of a new year. The fact that buyers have maintained their orders near normal indicates that distributor stocks are reasonably close to operating requirements.

Movement of distillate fuels is following routine lines. Prices are firm at unchanged levels. There is no evidence of excessive supplies in Group 3 territory. Suppliers report that inquiries and shipments appear to be in reasonably close balance.

Refined Oil Market Barometer

A vigorous market for residual fuel oil this year, forecast over the past several months by many economists, made a more impressive appearance this week, particularly in the Middle West, Mid-Continent and Atlantic Coast areas. Refiners in Group 3 territory advanced their prices for residual fuel 5 to 10 cents per barrel without deterring tank-car purchasers.

MID-CONTINENT: Motor-fuel movement is routine at unchanged prices.

GULF COAST: Prices are reasonably firm. Distillate fuels resist further cuts.

CALIFORNIA: Gasoline demand brisk. Prices soft and confined to narrow range.

PENNSYLVANIA: Lubricating oils moving fairly free. Wax demand improves.

CHICAGO: Heavy fuel-oil demand features trading at higher prices.

Gasoline Conditions Steady

Gasoline demand and prices are unchanged from the preceding week. Shipments against contracts are normal and spot buying is approximately unchanged. There was an unimportant lull during the latter part of last week but resumption of business Monday indicated that it was entirely attributable to the holidays. Production of recycling plants in Texas is exerting a growing influence on Group 3 motor-fuel markets, but the demand for inferior material is definitely limited. There are relatively few outlets willing to handle the recycling-plant products in their original form.

The Oklahoma market for natural gasoline is firm at 2⅜ cents for 26-70 material. Texas producers are quoting 2 cents. The Oklahoma market moved up an eighth December 23 when more active demand from the northern states became a factor. Supplies appear to be in balance with demand at the moment. There has been a slight increase in the movement from Texas and Louisiana plants to the Corpus Christi refining district. No conclusion has been possible in evaluating the Corpus Christi demand. Suppliers are uncertain whether the demand is indicative of a sustained demand in that direction or whether it was merely for the accommodation of one or two cargoes.

Mild Weather Grants Respite To Northern Fuel Suppliers

By J. P. O'DONNELL

NEW YORK, Dec. 31.—A rather protracted period of warm weather here has somewhat changed the aspect of the refined-oil markets. It has eased the fuel-oil situation materially, and while prices of furnace oil and fuel oil remain firm, there is nothing like the near scramble for material which was evident a week or 10 days ago. Marketers have had a breathing spell which has been very welcome to them and with the arrival of several large cargoes of material from the Gulf Coast they are in a more comfortable position.

While one major factor in the trade advanced No. 2 fuel oil from 4.9 to 5.1 cents a gallon in tank-car lots about 10 days ago, and has held to the higher level, it is regarded as somewhat significant of the more comfortable supply situation that no others have followed this advance. Most marketers continue to quote the 4.9-cent price at which most material is now changing hands.

Nevertheless stocks of gas oil and distillates at East Coast oil refineries last week showed a further shrinkage, reflecting the high industrial demand for fuel oils and gas oils. A decrease of no less than 527,000 bbl. was reported, a larger drop than was recorded the week before. This large decline, however, was attributed in trade circles to an unusual expansion in the consumption of gas oil. Natural gas is not much of a factor in the Atlantic seaboard territory, although some such gas is piped to outlying sections of Baltimore and Philadelphia and New Jersey points. Consequently, most of the petroleum heating requirements are reflected in gas-oil demand. The market is, therefore, sensitive to temperatures.

Marketers here now hope that the warm weather will result in relieving the pressure on the oil-tanker market. Should rates for Gulf-to-Atlantic-seaboard deliveries go lower in the near future it will probably be reflected almost immediately in prices for kerosene and No. 2 fuel oil which have been affected most by the high rates prevailing.

On the other hand, actual fixtures right up to today have not revealed any downward trend in tanker rates as yet. The latest fixtures were at 80 cents a barrel for a cargo of No. 2 fuel oil, 75 cents a barrel for kerosene and 70 cents a barrel for a shipload of motor fuel. In the tanker trade, however, these high rates are not expected to hold. They resulted in part from an unusually cold period in early December which depleted fuel-oil stocks here and caused a scramble for tankers for the rush movement of material to the Atlantic area.

The mild weather here has helped the motor-fuel market considerably. Whereas considerable 72-octane material of the unbranded variety had been moving at 5.5 cents a gallon in tank cars, little can now be had for less than 5.75 cents a gallon, it is reported. The industry had been pretty well stocked with branded and unbranded motor fuel early in December, and this had cushioned the effects of high tanker rates on the price structure. Now, however, stocks are said to be less unwieldy and the trade expects that a larger percentage of material sold from now on will bear the high costs of the movement from the Gulf Coast, rates on which have advanced from the equivalent of about 1 cent a gallon to nearly 1⅞ cents a gallon, a rise of ⅞ cent.

In the retail market, weakness in prices continues. Apparently the situation is somewhat worse in some outlying sections. During the week rather sharp declines were noted in Burlington, Vt., and Augusta, Me., while the posted dealer price in the Boston area was cut 0.2 cent a gallon, bringing the price level in this important market to the lowest point so far this winter.

Oil men here have maintained for some time that the unsatisfactory price situation prevailing in the service-station markets on the Atlantic Coast was due to basic weaknesses in the marketing system, rather than to the oversupply of motor fuel. There are far too many outlets, these trade authorities feel, and the present leasing system is not all that could be desired, in their opinion, with so many uneconomic stations in operation.

Motor fuel can now be obtained in many areas along the Atlantic seaboard for 15 cents a gallon for branded material, at retail, all taxes included. This is equivalent to 9½ cents a gallon return to dealers. Leading refiners are quoting motor fuel officially at around 12 cents a gallon to dealers. This is a discrepancy of 2½ cents a gallon and indicates that someone, whether the dealer or refiner, is taking a loss somewhere along the line.

Lubricants and wax continue strong, partly due to the heavy domestic demand and fairly good export turnover, and partly in sympathy with the favorable situation prevailing in western Pennsylvania markets.

Paraffin wax, which was somewhat spotty a week ago, is now firming up considerably, with considerable business booked for January delivery at current levels, according to trade reports.

Gulf Coast Markets

HOUSTON, Tex., Dec. 31.—Further softening of fuel and burning-oil prices at Gulf Coast refineries was indicated at the opening of the week with prolonged inactivity in spot markets and increasing stocks of these products exerting growing pressure upon some supplies to move material.

Buyers reported Monday that residual fuels of Bunker C specifications were being offered them in increasing quantities at 75 cents, a nickel under quotations most refiners have tried to hold. No cargo sales were reported. A few local tank-car sales were made at 80 cents, which would be in line with acreage price of 75 cents. Fuel to ships' bunkers is still bringing 80 cents firm.

Following the recent lead of one large supplier in quoting 3⅛ cents for No. 2 burning oil, others are now offering material pretty generally at that price, although getting no more business than at the higher figure. Several, however, still are quoting 3¼ cents.

Kerosenes continued easy but with no additional weakening of quotations from the 3⅝-cent low recently established. Several sources, however, are long on this material.

No change in gasoline markets or trends was noted during the week, and sellers gave little consideration to these products. Quotations continue more or less pegged at levels in effect for several weeks.

Resistance to Gulf Coast prices is being maintained by the strong conditions in tanker-chartering business. There is no apparent tendency on the part of boat owners to recede from the record quotations which have prevailed for 3 weeks. The tanker rates range from 70 cents per barrel for gasoline to 80 cents for fuel oil. Increased prices on the Atlantic Coast have absorbed only part of the higher transportation cost. Gulf suppliers have taken up the slack to maintain business against other competition.

Refiners are hopeful that early 1941 buying will arrest the trend to lower distillate-fuel prices. Most of the hopes are pinned on the possibility that the slump in buying because of inventory-reduction incentives may have been particularly acute this year.

A.P.I. Weekly Refinery Statistics

Week Ended December 28, 1940

	Capacity reporting (per cent)	Total gasoline stocks (bbl.)	Residual fuel-oil stocks (bbl.)	Gas oil and distillate stocks (bbl.)	Daily crude runs (bbl.)
East Coast	100.0	17,541,000	11,064,000	15,184,000	585,000
Appalachian	91.0	3,216,000	313,000	541,000	120,000
Ind., Ill., and Ky.	90.2	14,353,000	2,959,000	4,433,000	564,000
Okla., Kans., and Mo.	76.9	7,057,000	2,096,000	1,353,000	254,000
Inland Texas	59.6	1,898,000	1,560,000	408,000	119,000
Texas Gulf	89.2	13,109,000	8,191,000	7,467,000	902,000
Louisiana Gulf	97.6	2,845,000	2,244,000	1,456,000	121,000
N. Louisiana and Ark.	51.5	556,000	420,000	306,000	44,000
Rocky Mountains	56.0	1,057,000	420,000	154,000	43,000
California	87.3	15,642,000	71,598,000	10,189,000	492,000
Total reported	86.2	77,274,000	100,865,000	41,491,000	3,244,000
Est. unreported	.....	6,000,000	1,755,000	775,000	341,000
*Est. total	.....	83,274,000	102,620,000	42,266,000	3,585,000
*Est. total previous wk.	.....	81,870,000	102,841,000	42,260,000	3,585,000
*Dec. 29, 1939	.....	82,277,000	106,079,000	34,122,000	3,445,000

*Bureau of Mines.

Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATE)

Week ended December 21, 1940	262,488,000 barrels
Week ended December 14, 1940	261,293,000 barrels
Week ended December 23, 1939	236,038,000 barrels

Figures do not include stocks of heavy, unrefinable California crude.

RETAIL OIL MARKETS...

Tank-wagon and filling-station prices on gasoline and kerosene furnished by larger marketing firms

Prices as of December 31, 1940

Taxes

The gasoline quotations given in the following tables include the 1½-cent federal tax, as well as state, county, and city taxes. The gasoline is the regular or standard grade. In most areas lower grades and a premium grade also are available.

Standard Oil Co. (Indiana)

	Gasoline Tank wag.	Dlr.	Incl. tax	Kero. tank wag.
Chicago, Ill.	14.6	12.6	4.5	10.0
Decatur	14.6	13.1	4.5	9.5
Joliet	15.6	14.1	4.5	10.0
Peoria	15.6	13.2	4.5	10.0
Quincy	15.4	13.9	4.5	9.8
Davenport, Ia.	15.6	14.1	4.5	‡10.0
Des Moines	15.4	13.9	4.5	‡9.8
Mason City	15.8	14.3	4.5	‡10.2
Duluth, Minn.	16.4	14.9	4.5	10.8
Mankato	16.0	14.5	4.5	9.0
Minneapolis	16.0	14.2	4.5	10.4
LaCrosse, Wis.	17.0	15.5	5.5	10.4
Green Bay	17.4	15.9	5.5	10.3
Milwaukee	16.8	15.3	5.5	10.2
Detroit, Mich.	14.1	12.6	4.5	7.6
Grand Rapids	14.3	12.8	4.5	9.1
Saginaw	14.9	13.4	4.5	9.1
Evansville, Ind.	16.6	15.1	5.5	†9.8
Indianapolis	16.8	14.8	5.5	†10.0
South Bend	16.8	15.3	5.5	†10.0
Fargo, N. D.	18.2	16.7	5.5	11.6
Huron, S. D.	17.5	16.0	5.5	10.9
Kans. City, Mo.*	14.8	11.8	4.5	8.0
St. Louis*	14.7	13.2	4.5	9.0
St. Joseph	14.9	13.0	4.5	7.9
Wichita, Kans.	13.8	12.3	4.5	6.5

*State tax 2 cents, 1-cent city tax, and 1½-cent federal tax. †Does not include 4-cent state tax. ‡Does not include 3-cent state tax.

Exclusive of state general sales taxes.

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gal. or more, 1.5 cents off; minimum delivery 25 gal.

Stanolex Fuel Oil in Chicago

Effective Dec. 2, 1940, f.o.b. Chicago, tank-wagon prices: Standard heater oil, 1-99 gal., 9.0 cents; 100-149 gal., 8.0 cents; 150 gal. and over, 7.5 cents. Stanolex fuel oil No. 1, 1-99 gal., 8.5 cents; 100-399 gal., 7.5 cents; 400 gal. and over, 7.0 cents. Stanolex furnace oil, 1-99 gal., 8.5 cents; 100-399 gal., 7.5 cents; 400 gal. and over, 7.0 cents. Stanolex fuel oil A, 1-399 gal., 6.0 cents; 400-790 gal., 5.0 cents; 800 gal. and over, 4.75 cents. Stanolex fuel oil B, 1-399 gal., 6.0 cents; 400-799 gal., 5.0 cents; 800 gal. and over, 4.75 cents. Stanolex Bunker C fuel oil, 1-999 gal., 4.75 cents; 1,000 gal. and over, 3.75 cents.

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline Cons'r tank wag.	Dlvided dlr.	Incl. tax	Kero. tank wag.
Ohio points	16.0	15.0	5.5	*9.0

*Includes state tax of 1 cent.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
Atlantic City	11.00	12.60	4.5	8.1
Newark	11.00	12.60	4.5	8.1
Annapolis, Md.	12.85	14.35	5.5	9.5
Baltimore	12.25	13.75	5.5	8.75
Cumberland	13.65	15.15	5.5	10.0
Washington, D.C.	10.50	12.00	3.5	9.5
Danville, Va.	14.45	16.95	6.5	9.0
Norfolk	13.25	15.75	6.5	10.5
Petersburg	13.55	16.05	6.5	11.2
Richmond	13.55	16.05	6.5	11.0
Roanoke	14.75	17.25	6.5	11.0
Charles'n, W. Va.	14.05	16.55	6.5	12.6
Parkersburg	13.35	15.85	6.5	11.2
Wheeling	14.35	16.85	6.5	11.8
Charlotte, N. C.	16.40	15.00	7.5	10.55
Hickory	16.95	18.45	7.5	11.05
Mt. Airy	16.80	16.00	7.5	10.95
Raleigh	16.15	16.00	7.5	10.25
Salisbury	16.45	14.50	7.5	10.65
Charleston, S. C.	14.25	16.75	7.5	9.25
Columbia	15.10	17.60	7.5	(*)
Spartanburg	15.80	18.30	7.5	12.2

Price basis to Essolene undivided dealers: Dealer tank-wagon price less 0.5 cent per gallon. Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at a time by hose connection, on yearly purchases: From 2,500 to 100,000 gal., consumer tank-wagon price at time and place of delivery; 100,000 gal. per year, consumer tank-car price plus 0.5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less 0.5 cent per gallon.

Effective January 16, 1939, in North Carolina the commercial consumer schedule became as follows: Single deliveries of 50 gal. or more, consumer tank-wagon price. Single deliveries of less than 50 gal., 4 cents per gallon over consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price, less 0.5 cent per gallon. The above policy also applies in South Carolina, effective January 23, 1939.

*Kerosene business of the company at these points now exclusively handled by dealers.

Southern District

STANDARD OIL CO. (KENTUCKY)

	Gasoline Cons'r tank wag.	Net dlr.	Incl. tax	Kero. tank wag.
Atlanta, Ga.	14.0	14.0	7.5	9.0
Augusta	15.5	15.5	7.5	9.5
Macon	15.0	15.0	7.5	9.0
Savannah	15.5	15.5	7.5	9.0
Birmingham, Ala.	16.5	16.5	8.5	9.0
Mobile	15.5	15.5	9.5	8.0
Montgomery	18.0	18.0	9.5	10.0
Jackson, Miss.	16.0	16.0	7.5	9.0
Vicksburg	15.5	15.5	7.5	8.5
Jacksonville, Fla.	16.0	16.0	8.5	8.0
Miami	16.0	16.0	8.5	8.0
Pensacola	17.0	17.0	9.5	8.0
Tampa	16.0	16.0	8.5	8.0
Lexington, Ky.	15.5	15.5	6.5	9.0
Covington	13.5	13.5	6.5	9.0
Louisville	15.0	15.0	6.5	8.5
Paducah	13.0	13.0	6.5	8.5

Price basis to tank-wagon consumers, effective January 4, 1937, 3 cents per gallon below tank-wagon price.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax, and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola, Fla., has a city gasoline tax of 1 cent. All are included in the table.

Pennsylvania and Delaware

ATLANTIC REFINING CO.

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
*Philadelphia, Pa.	12.5	13.5	5.5	10.0
Pittsburgh	13.0	15.0	5.5	10.5
Allentown	13.0	14.5	5.5	10.5
Erie	12.5	15.0	5.5	10.0
*Scranton	13.0	14.5	5.5	10.5
Altoona	13.0	15.0	5.5	10.5
Dover, Del.	...	14.0	5.5	10.5
Wilmington	...	13.5	5.5	10.0

Price basis to undivided dealers, dealer tank-wagon price less 0.5 cent per gallon.

Discount on kerosene, 2 cents per gallon off tank-wagon price on tank-wagon deliveries of 25 gal. or more at one time.

*Voluntary discount of 1 cent allowed to dealers only.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline Tank truck	Serv. sta.	Incl. tax	Kero. tank wag.
San Francisco	16.5	17.5	4.5	11.5
Los Angeles	16.0	17.0	4.5	10.0
Fresno, Calif.	17.5	18.5	4.5	12.5
Phoenix, Ariz.	20.5	21.5	6.5	*17.5
Reno, Nev.	19.5	20.5	5.5	13.5
Portland, Ore.	19.0	20.0	6.5	13.5
Seattle, Wash.	19.0	20.0	6.5	13.5
Spokane	20.5	21.5	6.5	16.5
Tacoma	19.0	20.0	6.5	13.5

*Includes 5-cent state tax.

Discount to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents. To commercial consumers: On tank-wagon price; on single deliveries of 40 gal. and over, advance quantity discount extended at time of delivery, 3 cents. Service-station schedule applies on single deliveries less than 40 gal. On kerosene in tank-car, transport-truck, and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank wagon.

March 18, 1939, split dealer discount was canceled.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
Albany	12.2	13.2	5.5	8.0
*Met. New York	12.3	12.5	5.5	8.1
Buffalo	12.4	13.4	5.5	7.9
Rochester	12.8	13.4	5.5	8.5
Syracuse	12.5	11.2	5.5	8.9
Portland, Me.	11.7	13.0	5.5	8.4
Manchester, N.H.	12.8	12.6	5.5	9.2
Burlington, Vt.	12.8	12.3	5.5	8.6
Boston, Mass.	10.7	11.5	4.5	8.4
Worcester	11.3	12.0	4.5	8.5
Hartford, Conn.	11.5	12.0	4.5	7.9
New Haven	11.2	11.8	4.5	7.4
Providence, R. I.	10.7	12.2	4.5	8.4

*Does not include 2 per cent city sales tax, which is calculated on basis of net retail price exclusive of state and federal taxes. Metropolitan New York prices are undivided dealer prices; others are split dealer.

Effective August 8, 1940, the company changed its commercial consumer policy in New York and New England to the following:

Full compartment deliveries: Accounts buying less than 20,000 gal. annually, 0.5 cent above the commercial-consumer price: accounts buying from 20,000 to 120,000 gal. annually, commercial-consumer price; accounts buying 120,000 gal. annually and above, 0.25 cent off consumer price. Split compartment deliveries: Delivery of less than a full compartment, 250 gal., commercial-consumer price plus 1 cent. Steel-barrel deliveries: Commercial price plus 3 cents.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Incl. tax	Kero. tank wag.
Denver, Colo.	14.5	5.5	10.5
Grand Junction	16.5	5.5	12.0
Pueblo	15.5	5.5	9.0
Casper, Wyo.	16.5	5.5	11.5
Cheyenne	12.0	5.5	11.0
Billings, Mont.	16.5	6.5	12.0
Butte	15.5	6.5	13.0
Great Falls	15.5	6.5	12.0
Helena	15.5	6.5	12.5
Salt Lake, Utah	16.0	5.5	14.0
Boise, Idaho	†18.6	6.5	16.0
Twin Falls	†19.6	6.5	16.5
Albu'que, N. M.	*16.0	7.0	9.5
Roswell	*14.0	7.0	8.0
Santa Fe	‡17.0	7.5	9.5

*Includes city tax of 0.5 cent. †Includes toll-bridge tax of 1 mill. ‡Includes city tax of 1 cent.

Tank wagon represents price to consumers. Dealer represents price to dealers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline Cons'r tank car	Dlr. tank wag.	Incl. tax	Kero. tank wag.
New Orleans, La.	14.25	16.75	8.5	†11.0
Baton Rouge	14.75	17.25	8.5	‡10.5
Alexandria	14.75	17.25	8.5	‡10.5
Lafayette	15.00	17.50	8.5	‡10.0
Lake Charles	14.75	17.25	8.5	‡10.0
Shreveport	14.00	16.50	8.5	10.0
Knoxville, Tenn.	18.00	20.00	8.5	12.5
Memphis	16.00	18.00	8.5	11.0
Chattanooga	17.50	17.35	8.5	12.0
Nashville	17.00	17.50	8.5	11.0
Bristol	18.25	18.75	8.5	12.0

Essolene at dealer price less 0.5 cent per gallon to undivided dealers.

†Includes 1-cent parish tax and 1-cent state tax. ‡Includes 1-cent state tax.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gal. or more in one territory take posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gal. at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less 0.5 cent per gallon. Kerosene prices include 1-cent state tax.

Effective February 24, 1939, the company reestablished in New Orleans the commercial consumer policy on motor fuel effective in the rest of the state.

Effective December 12, 1938, the company revised its commercial consumer policy on motor fuel in New Orleans, as follows: Single deliveries of less than 50 gal., consumer tank car plus 2 cents per gallon 50 to 199 gal., consumer tank car plus 1 cent per gallon; 200 gal. and over, consumer tank car plus 0.5 cent per gallon.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline Tank wag.	Incl. tax	Kero. tank wag.
Texarkana, Ark.	13.5	5.5	6.0
Fort Smith	13.5	5.5	6.5
Little Rock	16.0	8.0	8.0
Muskogee, Okla.	13.5	5.5	7.0
Oklahoma City	12.5	5.5	6.5
Tulsa	12.5	5.5	6.0

Tank wagon represents price to consumers. If no dealer price is quoted, the tank-wagon price applies to all classes of trade.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline Tank wag.	Dlr.	Incl. tax	Kero. tank wag.
Omaha	17.4	15.9	6.5	9.5
McCook	17.0	14.4	6.5	9.0
Norfolk	17.5	15.4	6.5	9.9
North Platte	17.8	15.5	6.5	10.3
Scottsbluff	17.4	14.5	6.5	10.8

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective January 1, 1935.

Texas

	Gasoline Tank wag.	Dlr.	Incl. tax	Kero. tank wag.
Dallas, Tex.	11.5	15.5	5.5	6.0
Fort Worth	11.5	15.5	5.5	7.0
Houston	12.0	16.0	5.5	8.0
San Antonio	12.5	17.0	5.5	8.0

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank wagon*
Oleum spirits	16.2
V.M.&P. naphtha	16.5
Cleaners' naphtha	15.5
Stanisol	15.5

*Prices include 3-cent Illinois tax but not 1-cent federal tax nor 2 per cent retail occupational tax.

Prices f.o.b. Chicago. Each price subject to discount of 1 cent per gallon for 150-gal. lots if covered by contract.

Canada*

3-Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Gasoline Tank wag.	Incl. tax	Kero. tank wag.
Halifax, N. S.	24.5	10.0	18.0
St. John, N. B.	24.5	10.0	18.0
Montreal, Que.	24.0	8.0	16.5
Toronto, Ont.	24.5	8.0	17.0
Hamilton, Ont.	24.5	8.0	17.0
Winnipeg, Man.	27.5	7.0	22.5
Brandon, Man.	28.9	7.0	22.5
Regina, Sask.	25.0	7.0	20.0
Saskatoon, Sask.	28.0	7.0	23.0
Edmonton, Alta.	25.9	7.0	20.0
Calgary, Alta.	23.0	7.0	18.0
Vancouver, B. C.	21.0	7.0	23.0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon prices. Discount to undivided dealers, 1 cent below tank-wagon price. In Maritime Provinces both divided and undivided dealers pay tank-wagon price.

Tank-Wagon Changes

Standard Oil Co. of New Jersey advanced the tank-wagon price of No. 1 fuel oil 0.25 cent per gallon December 19 throughout North Carolina. The company advanced the kerosene tank-wagon price 0.5 cent per gallon at Richmond, Va., December 20.

Standard Oil Co. of New Jersey generally advanced tank-wagon price of No. 1 fuel oil 0.25 cent per gallon and the tank-wagon price of No. 2 and No. 3 fuel oil 0.4 cent per gallon December 12 throughout Maryland and the District of Columbia. The tank-wagon price of No. 2 fuel oil was reduced 0.5 cent per gallon December 17 at Columbia, S. C.

PRICES OF REFINED PRODUCTS...

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of December 31, 1940

The quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents a gallon on lubricating oils. Octane ratings in Middle West, Mid-Continent, and Southwest are based on A.S.T.M. method of testing.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04¾
63-66 octane	.04	.04¼
60 octane and below	.03¾	.04
60-62 400 grades:		
72-74 octane (regular)	.04½	.04¾
63-66 octane	.04¼	.04⅝
60 octane and below	.03¾	.04

NORTH TEXAS—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04¾
63-66 octane	.04	.04¼
60 octane and below	.03¾	.04
60-62 400	.03¾	.04⅛

NORTH LOUISIANA (Ark. and N. La. delivery)—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04⅞
63-66 octane	.04¼	.04½
60 octane and below	.03⅞	.04¼

ARKANSAS (Ark. and N. La. del.)—

U. S. Motor grades:		
72-74 octane (regular)		.04¾
60 octane and below		.04

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
72-74 octane (regular)	.04½	.04⅞
63-66 octane	.04⅛	.04½
60 octane and below	.03¾	.04⅛
60-62 400 grades:		
72-74 octane (regular)	.04½	.04⅞
63-66 octane	.04⅛	.04½
60 octane and below	.03¾	.04⅛

PENNSYLVANIA (inland refineries)—

74-76 octane (regular)		.06
72-74 octane		.05¾

CALIFORNIA (domestic movement)—

58-60 400, 65 oct. and higher	.05½	.07¼
54-58 U. S. Motor	.04½	.06¼

EAST COAST (domestic)—

U. S. Motor grades:		
New York (Bayonne)*	.05½	.06⅛
Philadelphia	.06	.07
Boston	.05¾	.06¼
Baltimore	.05¾	.06¾
Charleston, S. C.	.05¾	.06½

*All grades of gasoline ⅛ to ¼ cent less for barge shipments. New York Harbor prices are for New York and New England delivery. Prices for New Jersey delivery ¼ cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
72-74 octane		.03½
70-72 octane	.03¼	.03½
68-70 octane		.03¼
65-67 octane	.03⅛	.03¼

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.02⅝
Grade 18-55	.02¾	.02⅞

NORTH TEXAS—

Grade 26-70		.02
Grade 18-55		.02⅝

CALIFORNIA—

75-85 375-390	.04½	.05¼

NORTH LOUISIANA (Ark. and N. La. delivery)—

Grade 26-70		.02

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p., 110-flash, 540-550 e.p.	.03½	.03⅝
41-43 gr., 300-320 i.b.p., 110-125 flash, 500-520 e.p.	.03¾	.03¾
46-48 gr., 210-230 i.b.p., 480-max., e.p.	.03¾	.04

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

42-44	.04⅛	.04¼
41-43	.04	.04⅛

NORTH TEXAS—

41-43	.03⅞	.04

NORTH LOUISIANA (Ark. and N. La. delivery)—

41-43	.03⅞	.04

ARKANSAS (Ark. and N. La. del.)—

41-43	.04	.04¼

PENNSYLVANIA (inland refineries)—

46	.05	.05⅜
45	.05	.05¼

CHICAGO (Based on Group 3)—

42-44	.04	.04¼
41-43	.03⅞	.04⅛

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.04½	.05½

NEW YORK (Bayonne, N. J.)—

41-43	.053	.055

GULF COAST (domestic)*—

41-43	.03⅝	.03⅞

*Barge price ⅛ cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

Range oil	.03⅞	.04
No. 1 prime white, 38-42	.03¾	.03⅞
No. 1 straw, 38-40	.03⅝	.03¾
No. 2 straw, 32-36	.03½	.03¾
No. 3 zero to 10, 28-32	.03⅝	.03½

NORTH TEXAS—

No. 1 prime white, 38-42	.03⅝	.03¾
No. 1 straw, 38-40	.03½	.03⅝

NORTH LOUISIANA (Ark. and N. La. delivery)—

No. 2, 32-36	.03½	.03⅝

ARKANSAS (Ark. and N. La. del.)—

No. 2, 32-36	.03½	.03⅝

CHICAGO (Based on Group 3)—

Range oil	.03⅞	.04
No. 1 prime white, 38-40	.03¾	.03⅞
No. 2 straw, 32-36	.03½	.03¾
No. 3 zero to 15, 28-32	.03½	.03⅝

NEW YORK (Bayonne, N. J.)—

*No. 1	.053	.055
*No. 2	.047	.049
*No. 4	.047	.049

*Barge deliveries ⅛ to ¼ cent under above tank-car price.

Gas Oil and Fuel Oil

(Gas oil per gal., fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil, under 35	.03½	.03¼
No. 5, low pour point, 18-22	.72½	.77½
No. 6, 15 and above, 8-14	.60	.65

NORTH TEXAS—

U.G.I. gas oil, under 35	.02¾	.02⅞
No. 5 low pour point, 18-22	.72½	.77½
No. 6, 15 and above, 8-14	.60	.65

NORTH LOUISIANA (Ark. and N. La. delivery)—

10-14 fuel oil, industrial		.70

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.02¾	.03
No. 5, low pour point, 18-22	.75	.80
No. 5, 15 and above, 18-22	.60	.70
No. 6, low pour point, 10-16	.60	.70
No. 6, 15 and above, 8-14	.60	.65

PENNSYLVANIA (inland refineries)—

36-40	.04½	.05

CALIFORNIA—

Los Angeles:		
30-40 gas oil, per bbl.	1.10	1.25
24 plus diesel, per bbl.	1.10	1.25
24 plus diesel (bunkers)	1.20	1.35
12-16 (bunkers at tidewater)	.65	.75
10-16 (cargo lots)	.65	.75
12-17 (tank cars)	.60	.75
10-17 (high sulfur)	.50	.65
San Joaquin Valley:		
10-18 (tank cars)	.55	.70
24 plus diesel, per bbl.	1.10	1.25
San Francisco:		
24 plus diesel, per bbl.	1.35	1.40
24 plus diesel (bunkers)	1.40	1.50
10-16 (bunkers)	.75	.80

GULF COAST—

No. 2 fuel	.03⅛	.03⅜
43-47 diesel	.03¼	.03½
48-52 diesel	.03½	.03⅝
53-57 diesel	.03⅝	.03⅞
58-and-above diesel	.03⅞	.04
Diesel bunkers		1.50
Bunker C (bulk cargoes)	.75	.80
Bunker C (bunkers)		.80

NEW YORK (Bayonne, N. J.)—

27 plus, gas oil		.05
28-30 diesel (lighterage 6¼c per bbl.)		2.00
28-30 diesel (tank cars)	.047	.049
Bunker C (to ocean-going ships in N. Y. Harbor	1.15	1.25
Industrial fuel (tank cars)		.046

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

200-210 D, 10-25		.18
150-160 D, 0-10		.13½
150-160 D, 10-25		.13
100-110 D, 0-10		.13
100-110 D, 10-25		.12½
Steam refined:		
600 dark green (untreated)		.07

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 140-150 at 210, 545-550 flash):		
10 pour point		.14½
15 pour point		.13½
25 pour point	.12	.13
Steam refined:		
600	.07½	.08
650	.08	.08½
600 flash	.09	.09½
630 flash	.11	.12

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

0-10 pour point:		
150-3		.08
180-3		.08½
200-3		.08½
250-3		.10
280-3		.10½
280-4		.10
300-3½		.11
350-3½		.11⅛
400-3½		.12
500-3½		.12⅛
600-3½		.13
100-2½ paraffin oil, 10-25		.05¼
10-25 pour point:		
200-3		.08
250-3		.09½
280-3		.10
280-4		.09½

GULF COAST—

Pale oils:		
100-3	.05¼	.05½
200-3	.07¼	.07½
300-3	.07½	.07¾
500-3½	.08¼	.08½
750-3½	.08¾	.08⅞
1,200-3½	.08¾	.08⅞
2,000-4		.09
3,000-4		.10½
Red oils:		
200-5-6	.06⅞	.07
300-5-6	.07¼	.07½
500-5-6	.08	.08¼
750	.08⅝	.08½
1,200-5-6	.08¼	.08⅝

CALIFORNIA (moving to dom. market)

Pale oils:		
100-2½-3	.07¼	.08
200-2½-3	.07¼	.08
300-2½-3	.07¼	.08
400-3-4	.07¼	.08
450-3-4	.07¼	.08
550-3-4	.09	.11
600-3-4	.09	.11
Red oils:		
200-4-5	.07¼	.08
300-5-6	.07¼	.08
350-5-6	.09¼	.11½
400-5-6	.09¼	.11½
450-5-6	.09¼	.11½
500-5-6	.09¼	.11½
600-5-6½	.09¼	.11½
700-6½ plus	.09¼	.11½
750-6½ plus	.09¼	.11½
900-6½ plus	.09¼	.11⅝

PENNSYLVANIA—

150 vis., at 70° F., 3 color, 400-405 flash:		
Zero pour point		.22½
10 pour point		.21½
15 pour point		.20¼
25 pour point	.19	.20
200 vis., at 70° F., 3 color:		
Zero pour point		.24¼
10 pour point		.23½
15 pour point		.22¼
25 pour point	.21	.22

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (A.m.p.) w.c. scale	.02½	.02¾

PENNSYLVANIA (inland refineries)—

122-124 (A.m.p.) w.c. scale	.02¾	.02⅞
124-126 (A.m.p.) w.c. scale	.02¾	.02⅞

NEW YORK—

Wax in bags fully refined:		
125-127 (A.m.p.) wax		.0560
128-130 (A.m.p.) wax	.0560	.0570
130-132 (A.m.p.) wax		.0585
133-135 (A.m.p.) wax		.0615
135-137 (A.m.p.) wax		.0640
Crude scale:		
124-126 (A.m.p.) w.s.		.02⅞
124-126 (A.m.p.) y.s.		.02⅞
Petrolatum in barrels, carload lots:		
Dark green	.02125	.02625
Amber	.02375	.02875
Extra amber	.02625	.03000
Lily white	.04375	.05125
Snow white	.05125	.06000
Cream	.03375	.04125

Export Prices

GASOLINE

GULF COAST—

U. S. Motor		.03¾
60-62 400		.03¾
61-63 390	.03⅞	.04
64-66 375	.03¾	.04

LOS ANGELES—

U. S. Motor grades:		
Above 69 octane	.05½	.05¾
65-69 octane	.05¼	.05½
60-65 octane	.04½	.05

KEROSENE

GULF COAST—

41-43 water white	.03⅝	.03¾

LOS ANGELES—

41-43 water white	.05	.05¼

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.a.s. in bbl.)—

Cylinder stocks:		
600 S.R. unfiltered		.16
630 S.R. unfiltered		.17
600 flash, S.R.		.18
650 flash, S.R.		.20
Bright stock:		
Light, 25 pour point		.20½

NEUTRAL OIL

200-3 color		.27
150-3 color		.25½

PARAFFIN WAX

NEW YORK (prices per lb.)—

123-125 A.m.p.		.05600
125-127 A.m.p.		.05600
128-130 A.m.p.		.05850
133-135 A.m.p.		.06150
135-137 A.m.p.		.06400
Crude scale:		
124-126 w.s.	.02½	.02⅞
124-126 y.s.	.02½	.02⅝

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FOR SALE Oil and gas leases and small production located in Kentucky shallow field, also tracts of proven Fluorspar and zinc deposits. Reports on request. W.P. HARLEY. Bowling Green, Kentucky.

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WHY drill dry holes? Our method only locates structures which contain oil or gas. Drawer 711, Brownsville, Texas.

WILL take $7500.00 cash for ⅛ interest in 3000 acres oil leases and drilling well, half completed, good geology, on West Texas Structure, six formations to 3250 ft. depth. Address Owner, 610 Wilson Building, Dallas, Texas.

3000 A. near Cities Service Pool, Phillips County, Kans. For leases or royalty write J. D. SEARCH, Logan, Kansas.

FOR SALE: Twenty-five acre lease, Joaquin Pool, in heart of activity. Also have drilling block on good structure. Write for map and information. C. A. Parker, Box 451, Center, Texas.

FOR SALE: 12,000 acre block oil and gas leases in Eastern Wyoming. Write Box A-292, The Oil and Gas Journal, Tulsa, Oklahoma.

CAPITAL wanted to help finance drilling shallow (proven) gas acreage established market. Also 4,000 oil and gas acreage on structure Ky. Write Box A-290, The Oil and Gas Journal, Tulsa, Okla.

SPECIALIZED Geophysical investigations conducted for petroleum promise. In touch with many opportunities to and for development of drilling blocks. P. O. Box 364, Fort Worth, Texas.

WANTED—Some one to finance drilling and developing oil wells on our farms. Creasey Brothers, R.F.D., Dalton, Ky.

Leases and Drilling Blocks

SEE Frank Boykin, Girard, Louisiana, for drilling block or blocks in heart of abandoned Richland Parish big gas field.

WANT PARTNER with $2500. to recover on producing, very shallow lease, twin sands, 20 odd wells, responsive to water flood. M. B. Jenson, 3502 South Peoria, Tulsa, Oklahoma.

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MAN'S new bearskin overcoat. Cost $350.00. Would make into wonderful rug for den. Sell at discount or trade for gasoline books. 426 No. Santa Fe, Tulsa, Okla.

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YOUNG six-cylinder Drilling Engines, Cyclone and Waukesha four-cylinder Drilling Engines, Marion single-cylinder 25 H.P. Gas Engine with Standard Clutch, Reid Reverse Clutch on skids, Ingersoll-Rand ER1 10 x 8 Compressor, one 12 x 10 ER1 Cylinder with Piston and Rod, Electric Generating Units, 180 H.P. Buda JL-6 power unit with Clutch, Under-Road Boring Machine for pipe lines.
A. E. AVERS, Representative,
Box 604, Tulsa, Okla.
YOUNG ENGINE CORPORATION,
Box 532, Canton, Ohio.

FROM REFINERY equipment we offer 1—ten thousand barrel riveted tank, 2—Scotch Marine Boilers, 2—6′ x 40′ Bubble Towers, 1—5′ x 51′ Bubble Tower, 2—5′ x 40′ Flash Towers, 300—4″ Still Header Boxes, 1—6′ x 96′ Smoke Stack, 2—18 x5 x 18 Pumps, 1—10 x 6 x 24 Worthington Simplex Hot Oil Pump, 1—22 x 36⅝ x 6 x 24 Wilson Snyder Duplex Hot Oil Pump, 3—85 HP Diesel Engines, 1—Cracking Furnace, brick, castings, and structure, 1—Exhaust Steam Heater.
Box 1011 — Mt. Pleasant, Texas.

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FOR SALE—$300 EACH
6 Good 12″ x 12″ Twin Steam drilling engines, Ideals—Luceys—Johnsons.
LUCEY PRODUCTS CORPORATION
Tulsa, Okla.

FOR SALE
Rotary rig complete with exception of drill pipe, steam outfit, 2 good 90 H.P. boilers, one 100 H.P. boiler, outfit unitized, 5C3 Union Tool draw works, one Lucey 12000 mud pump, one Johnson gumbo buster, twin 12 x 12 Ajax engines, two 3 KW generators, pumps, 2 boiler feed pumps, outfit for 6 inch drill pipe, complete line of small tools; One unitized Shaffer drilling-in unit with unitized bull wheels, 75 H.P. Oil Well code boiler, good ⅝″ 5000 ft. sand line and all necessary standard drilling-in tools.
STEARNS-WALKER DRILLING CO.
805 Ellis Singleton Bldg., Wichita, Kans.

FOR SALE: In Oklahoma City field 50—1000 barrel BS&B VP used oil storage tanks, Cheap. I. T. I. O., Bartlesville, Oklahoma.

RECEIVER'S SALE
5 fully equipped producing gas wells, 6 producing oil wells, 3 equipped non-producing oil and gas wells. National Drilling Machine, tools and miscellaneous equipment. Leasehold rights on 174 acres. Room for Additional Development.
SALE — WEDNESDAY—JANUARY 15, 1941—1:00 P.M. on Premises 5 miles South of St. Clairsville, Ohio. For details write Carter Thornburg, Receiver, The Richland Developing Association, St. Clairsville, O.

FOR SALE: 4 — OCS Roller Bearing Chain Driven Sand Reels. I. T. I. O., Bartlesville, Okla.

FOR SALE OR LEASE
Any part of 50 tank cars. Pennsylvania Oil Products Refg. Co., Warren, Pa.

FOR SALE: At our Oklahoma City warehouse slightly used Cardwell KS DHS skid type oil well servicing unit equipped with DHK Waukesha motor. I. T. I. O. Co., Bartlesville, Okla.

FOR SALE, liquid purification plant, capacity 6,000,000 cubic feet of gas per day, also 4 steel purifier boxes, capacity 6,000,000 cubic feet per day. All in excellent condition. Operation ceased November 1, 1940.
Box A-270
The Oil and Gas Journal, Tulsa, Okla.

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	1 time	2 times	3 times	4 times		1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30	7 Lines	$2.45	$4.20	$5.95	$7.70
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5 Lines	1.75	3.00	4.25	5.50	9 Lines	3.15	5.40	7.65	9.90
6 Lines	2.10	3.60	5.10	6.60	10 Lines	3.50	6.00	8.50	11.00

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Tulsa, Oklahoma

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10,000 Ft. 7" O.D. 26# seamless casing, once run.
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In addition to the above we have 20,000 Ft. of 6" screw line pipe in Oklahoma; also drilling rig capable of drilling to 6500 feet, complete stock of line pipe, casing, drilling and pumping equipment.

Wire, Write or Phone for Prices

Louisiana Iron & Supply Co.
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FOR SALE: At Bartlesville 1—2A National Portable Drilling Machine Less Tools. I. T. I. O. Co., Bartlesville, Okla.

25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine-Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also large stock of lathes, pipe machines, milling machines, etc. Send for our list.
Terms to suit.
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"Anything **containing IRON or STEEL"**

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All Sizes Storage Tanks—Wood or Steel Roof—10,000 bbl. to 80,000 bbl.
Abandoned Plants—Natural Gasoline, Oil Refineries, etc.
Send us lists of your surplus material and equipment

SONKEN-GALAMBA SUPPLY COMPANY

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Riverview at Second, Kansas City, Kansas

Robt. W. Duden
2100 S. Union, Tulsa, Oklahoma

FOR SALE

ANY QUANTITY
NEW SEAMLESS STEEL COUPLINGS

750—13" O. D. (12½" Pipe) 8-V Thread x 8¼" long, Line, at $1.35 each.
3000—1¼" Black Merchant Forged Steel, at 4c each.
2500—1½" Black Merchant Forged Steel, at 5½c each.
6000—1¼" Galv. Merchant Forged Steel, at 5¼c each.

RECONDITIONED PIPE

30,000 feet 12", 50 lb. at $1.25 per foot.
80,000 feet 6" Std. at 38c per ft.
All of the above F.O.B. Philadelphia District, subject to prior sale. Pipe in lengths 18'0" and longer, plain ends.

EASTERN PIPE SUPPLY COMPANY
1424 N. NINTH STREET
PHILADELPHIA PENNA.

TRACTORS

Caterpillars, crawler type, size "35," $375; size "65" with nigger-head winch, $750; Caterpillar RDS with bulldozer, $2000; Allis-Chalmers Model L with bulldozer $1750. Guaranteed, slightly used. O. C. Evans, Mt. Sterling, Ky.

INTEGRATOR — EMCO-McGAUGHY MAKE—IN GOOD CONDITION, ATTRACTIVE PRICE. U. & I. SUPPLY CO., JACKSON, MICH.

FOR SALE: 1—Ideco Portable Standard Rig suitable for drilling, pumping, or servicing, complete less motor. I.T.I.O., Bartlesville, Okla.

SMALL complete rotary. Longyear rotocore hoist. Derrick on truck. 7¼ x 10 G D pump. Two gas engines. Ready to drill less drill pipe. 109 N. Waggoner, Electra, Texas.

Situations Wanted

SECRETARY—26, 5 years' experience, desires change. Go anywhere, prefer Houston vicinity. Box A-272, The Oil and Gas Journal, Tulsa, Okla.

METER man and chemist—30. BS degree chemical engineering. Six years in metering and controlling instruments. Four years in water corrosion and scale prevention control. Married. Employed. Prefer South Texas location with independent refiner requiring combination man. Box A-291, The Oil and Gas Journal, Tulsa, Okla.

CHIEF CHEMIST—Process Supervisor. M. I. T. graduate. Experienced in manufacture of gasoline, lube oils, greases, asphalts, waxes, specialties. Fifteen years' experience. Address Box A-300, The Oil and Gas Journal, Tulsa, Oklahoma.

WANTED — Portable spudder for use eastern Oklahoma. Give description and price. Box A-293, The Oil and Gas Journal, Tulsa, Okla.

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DRY DOCK; wood, 10,000-ton D.W.T.
DREDGE: hydraulic, for approx. 18" to 24" section line.
TUGS & BARGES; ocean.
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'Anything containing IRON or STEEL'

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DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

CAPITAL SEEKERS

Put your project before 260 Key-Men. Cost trifling. Details free. AMSTER LEONARD, Fox Theater Building, Detroit, Michigan.

Ranches—Farm Lands

56,000 ACRES—$8.00

56,000 acres of good ranch land, 85% agricultural, now stocked with 3,000 head of steers, on highway, modern 10 room house, lights, telephone like in city. Is divided into 9 pastures, 4 wells, 21 troughs, 38 large tanks; a paradise for wild game, deer, quail, ducks, and fish. Has good geology, mineral, and oil rights intact; hilly part of ranch has abundance of coal. W. H. Wilson, Carrizo Springs, Texas.

Recycling Assuming Rightful Place in Producing Economy

(Continued from Page 14)

are reported planned for the Francitas and Bessemer fields.

Louisiana

There are as yet no true recycling plants in operation in Louisiana. The pressure-maintenance plants of Continental Oil Co. at Tepetate and Ville Platte handle gas from a combination of gas-condensate and crude-oil reservoirs. The largest single plant production of condensate will be in operation in February 1941, when the Cotton Valley Operators Committee completes its project at Cotton Valley, Webster Parish, North Louisiana. The cooperative operation will process 150,000,000 cu. ft. of gas from the Bodcaw and "D" sands and will produce an estimated 470,000 gal. of condensate and light products daily. At Lisbon, high-pressure gas is being produced, condensate recovered by simple pressure reduction in two stages, and the stripped gas returned to a low-pressure crude-oil horizon in the field. Recycling operations are proposed at Bateman Lake, Berwick, Lake Arthur, Lake Mongoulois, Lirette, North Tepetate, South Jennings and Ville Platte fields.

Gas-Condensate Reserves

The discovery of high-pressure gas-condensate reserves has outpaced installation of recycling plants to efficiently produce them. A total of 141 fields in Texas, Louisiana and Arkansas are known at this time. Of these, recycling operations are under way in only 13 fields, and proposed or building plants add only 14 more fields. The pools in these three states comprise a total of 870 wells. Many of these wells are shut in because of a lack of market for gas. Others are producing gas for legal uses, making recycling a more immediate need if condensate is to be recovered before reservoir pressure declines too far.

Recycling is not considered feasible in some fields, due to low condensate yield, gas production commitments, or active water drive which maintains pressure under restricted production. Many of the existing fields, however, and more to be discovered will probably be produced by pressure-maintenance means in the future. The installation of plants depends on several factors, including the currently important one dealing with market outlet for condensate.

All condensate produced at this time is not the product of recycling plants, since much high-pressure gas is withdrawn for immediate consumption. In Louisiana, where no recycling in the strict sense of the word is yet practiced, condensate production totaled over 2,000,000 bbl. during 1939. This was from wells which produced gas with market outlet, principally in Cotton Valley, Rodessa and Lake Arthur.

Arkansas

Arkansas has two fields classified as gas-condensate pools. Big Creek, consisting of but one well, produces 66.5-gravity condensate from 7,980 ft. at a gas-condensate ratio of 24,400 cu. ft. per barrel and is shut in without a regular market for gas. McKamie, consisting of two wells, shows a reservoir pressure of 4,365 lb. per sq. in. The reservoir depth is 9,200 ft. and production is allocated at 90 bbl. per well per day. Both fields produce from the Smackover lime, and an unusually effective water drive precludes the necessity for recycling gas, provided withdrawals are held to a critical production rate.

Fig. 2 shows the distribution of gas-condensate fields. Although they extend generally throughout the Gulf Coast belt, they show concentration in the lower Gulf Coast and East Central Texas, and North Louisiana and South Arkansas. Their concentration is partly a result of deeper drilling in those areas, and continuation of drilling to increasing depths may be expected to bring to light further gas-condensate reserves throughout the area mapped, and possibly further north into the Mid-Continent area.

●

Home Burner Sales Soar

NEW YORK, Dec. 31.—Home oil-burner sales in 1940 are estimated at 285,000 units, the greatest record in the history of the industry, according to Ray G. Whipple, president of Oil Burner Institute, and the industry goes into the new year in the strongest position it has been in for many years.

"Estimated sales of 285,000 oil burners in 1940 compare with 240,000 in 1939; 157,000 in 1938, and 202,000 in 1937. The low recent year for the industry was in 1933, with 83,000 burners sold.

"With basic conditions in the industry sounder than they have been in years, the industry has its greatest opportunity for cooperative thinking and effort which will enable it to meet whatever problems may arise. That the industry is recognizing this opportunity is evidenced by its response in connection with the forthcoming National Oil Burner Progress Exhibition and Convention, sponsored by Oil Burner Institute," he said.

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